Chronology,
634.9618Gates Park
J8cgp prescribed fire,
1989 July 10 to October
30, 1988, Bob
Marshall
Wilderness

Agriculture

Lewis and Clark
National Forest
P.O. Box 871
Great Falls, MT.
59403

CHRONOLOGY
GATES PARK PRESCRIBED FIRE

July 10 to October 30, 1988

STATE DOCUMENTS COLLECTION

Bob Marshall Wilderness

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CHRONOLOGY

GATES PARK

PRESCRIBED FIRE

Rocky Mountain Ranger District

Lewis and Clark National Forest

1988

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GATES PARK PRESCRIBED FIRE

This is a chronology of the events surrounding the Gates Park Prescribed Fire. The fire was managed within guidelines established in the Bob Marshall/Great Bear Wilderness Fire Management Plan approved in 1983 and included in the Lewis and Clark National Forest's Land Management Plan. The Gates Park fire occurred in the Sun River Pass Fire Management Unit. There have been eight fires in this unit since 1983. Five of these have been lightning-caused, and three of the lightning caused fires have been designated prescribed fires.

The Gates Park prescribed fire was located about 36 air miles west of Choteau, Montana, in the heart of the Bob Marshall Wilderness. Access is by foot or horseback. The nearest trailhead is approximately 13 miles by trail from Gates Park over Headquarters Pass. It requires about 1 hour travel from Choteau to the trailhead by vehicle and then a 6 hour walk or horseback ride into the Gates Park Guard Station. There is a grass airstrip at the Gates Park Guard Station that is open to administrative and emergency use.

The fire's origin was in the SW 1/4 of the NW 1/4 of Section 25, Township 24 N, Range 11 W. This is about 2 miles northwest of the Gates Park Guard Station, on the west side of a large valley formed by the North Fork of the Sun River. The valley extends south for 23 miles from Sun River Pass until it narrows rapidly where the North Fork joins the South Fork just above Gibson Reservoir.

Eastern tributaries to the North Fork of the Sun River cut deep drainages in valley's east wall. The east wall is the Wilderness boundary, separating the Sun and Teton River drainages. The tributaries flow west or southwest. The west side of North Fork of the Sun River is less steep; drainages flow west to east with some exceptions such as Gates Creek and Red Shale Creek. The top of the headwalls form the Continental Divide, separating the Sun and South Fork of the Flathead River drainages.

Gates Park Guard Station, in the center of the valley, is about 1 mile west of the North Fork of the Sun River. The Guard Station complex (a main cabin, bunkhouse, several out buildings, and a corral) is near the center of a flat clearing 2 miles long that contains the airstrip. Gates Creek flows across the north and east sides of the clearing. Gates Ridge, a low timbered ridge, lies between the clearing and the River.

Vegetation is primarily classified in Fire Group 7 and 9 with some Fire Group 5 in the vicinity of Gates Park proper and Fire Group 10 at higher elevations. Fire Group 7 includes cool habitat types usually dominated by lodgepole pine (Pinus contorta), and 9 includes moist, lower subalpine habitat types with lodgepole pine and some Douglas-fir (Pseudo tsuga menziesii) the major components of seral stands.

The understory is primarily sub-alpine fir (Abies lasiocarpa) with more spruce (Picea engelmannii) in the bottoms. Fire Group 5 is dominated by Douglas-fir and Fire Group 10 represents cold, moist upper subalpine and timberline habitat types. Considerable white bark pine (Pinus albicaulis) occurs in Fire Group 10. For a more complete description, refer to the Bob Marshall, Great Bear Wilderness Fire Plan.

Pre-fire fuels in the fire area can generally be classed as Fuel Model 10 (or NFDRS Fuel Model G) and Fuel Model 8 (NFDRS Fuel Model H). The open grasslands near Biggs Creek Flats are classed as Fuel Models 1 and 3 (NFDRS Fuel Model C). The heaviest fuels of Fuel Model 10 lie west of the Sun River. They are primarily old growth lodgepole pine with considerable advanced fir understory and much downfall in the 30 to 80 ton per acre range. In the wetter bottoms, like Red Shale Creek, the fuels are mature, all stands of spruce and fir with heavier fuel loading up to about 100 tons per acre. Many areas of Fuel Model 8 were typical lodgepole pine pole stands with a grouse whortleberry (Vaccinum scopanium) and beargrass (Xerophyllum tenax) understory. However, many had progressed into a transition between Fuel Model 8 and 10 with spruce and fir reproduction in the understory and some downfall. This condition and some Fuel Model 10 extended east of the Sun River in to the Headquarters and Ray Creek drainages and to a lessor degree in the other drainages east of the River.

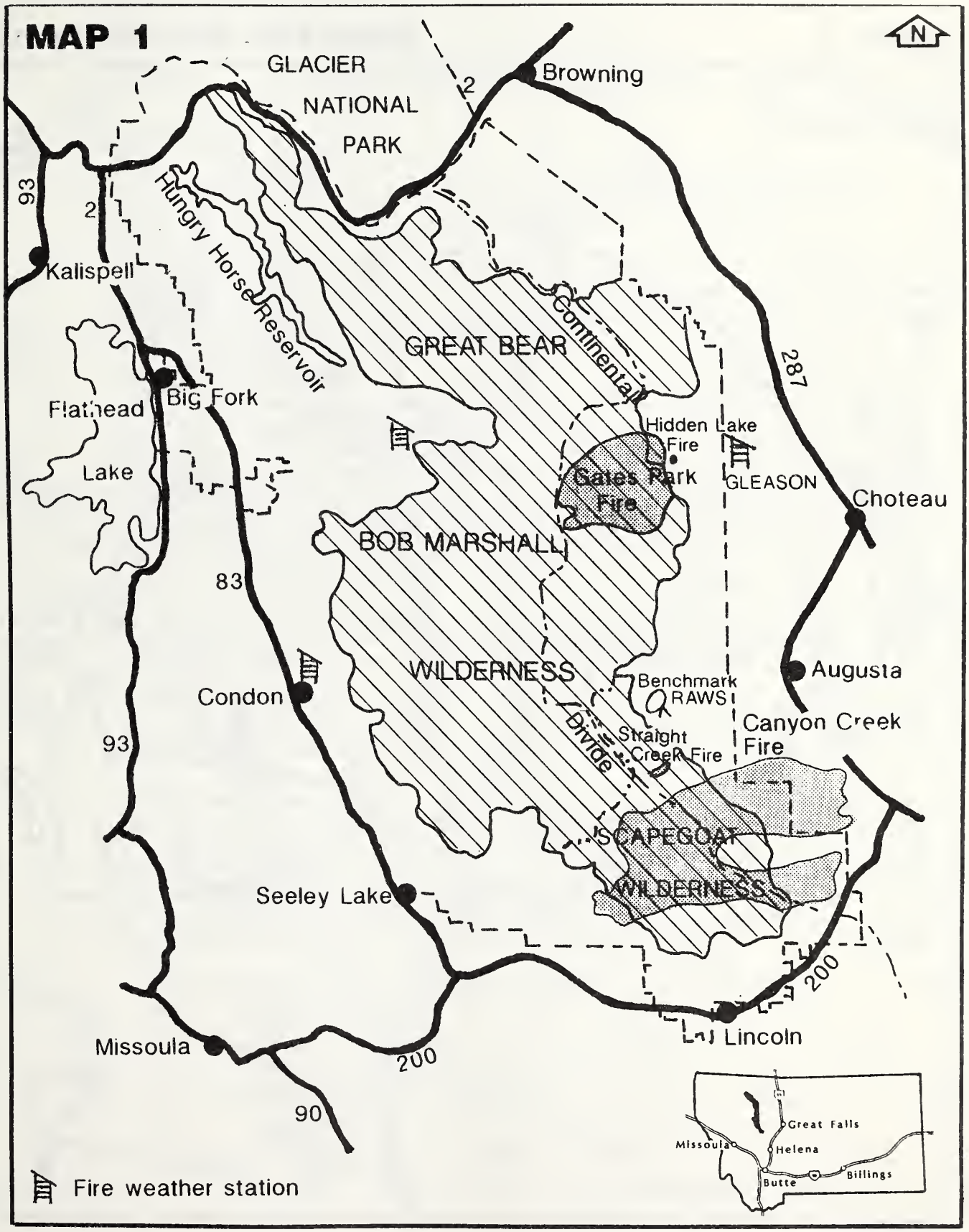
The Gates Park Fire was started by lighting on July 10 and was discovered by Beartop Lookout on July 11. After initial analysis, the fire was placed into prescription by Forest Supervisor Dale Gorman.

During the first 10 days, the fire grew to about 300 acres. On July 27, in spite of the efforts of an 8 person ground crew, the fire moved across the North Fork of the Sun River. On July 27-28, the fire made a major run up Ray Creek. On the 31st the fire made another major run up Headquarters Creek. The fire was now 14,832 acres.

On August 10, a three person tactical team was assembled to manage the Gates Park Prescribed Fire. Using wet line and fire line explosives, crews directed by the team stopped the fire from making a major run up Route Creek, where it could easily exit the wilderness boundary. The team also kept the fire from spreading south into Grouse Creek, where it could have crossed the Fire Management Unit boundary and threatened private property. By the end of the August the fire was 29,246 acres.

A major weather event that began during the night of September 5 expanded the fire on most fronts and by morning on the 6th, the Gates Park fire was nearly 50,000 acres. Supervisor Gorman decided that even though the fire was still in prescription, because of the Governor's order limiting outdoor activities, the Gates Park Fire should be moved to a wildfire status. The fire had been successfully managed as a prescribed fire for 55 days through some of the driest weather on record. The fire was controlled on October 26 at 51,840 acres. Only two minor accidents occurred during the entire course of the fire.

During the 1988 Fire Season, 15 other fires occurred on the Rocky Mountain Ranger District. Seven were in the Bob Marshall or Scapegoat Wilderness. Six of these fires were declared wildfires and suppression action was immediately taken. The seventh fire was the Canyon Creek Prescribed Fire that burned onto the Rocky Mountain Ranger District from the Lolo National Forest on August 9. This fire was declared a wildfire on August 30.


MAP 1
N
GLACIER
NATIONAL
PARK
Browning
2
93
2
Hungry Horse Reservoir
Kalispell
Flathead
Lake
Big Fork
GREAT BEAR
WILDERNESS
Continental
Divide
287
Hidden Lake
Fire
Gates Park
Fire
GLEASON
Choteau
BOB MARSHALL
83
Condon
93
Benchmark
RAWS
Straight
Creek Fire
Canyon Creek
Fire
Augusta
SCAPEGOAT
WILDERNESS
Seeley Lake
200
Lincoln
Missoula
200
90
Great Falls
Missoula
Helena
Butte
Billings
Fire weather station

MAP 2 Final Fire Boundary

SPECIFIC EVENTS DURING THE GATES PARK PRESCRIBED FIRE

7/11/88 Monday

At approximately 1525, Walt Jaeger, Beartop Lookout reports a fire to the District office in Choteau. A lightning storm passed through this area about 2100 on 7/10/88.

When informed of the situation, Norm Kamrud, District Fire Management Officer, notifies the District office in Choteau of the unplanned ignition that may go into prescription. Kamrud requests personnel on the District familiar with Management Fires standby for further information. Great Falls Dispatch and Dick Smith, Forest Fire Staff, are notified.

At approximately 1730, Kamrud, and Jim Forrest, Wilderness Guard in the Gates Park area, attempt to reach the fire by horseback and foot. Although close, they are unable to reach the exact site. The fire is in heavy, downed fuel with old growth overstory; fuel model G (or 10).

Based on the location of the fire, Kamrud determines that the fire is lightning caused and that a Wilderness Fire Incident Plan should be prepared. Tim Love, District Resource Assistant, and Anita DeZort, Biological Technician, initiate the analysis and prepare an the Incident Plan. The fire meets the requirements for prescription, but because of the time of year the fire started (after July 1) the decision is at the Forest Supervisor level.

At approximately 2200, Love consults with District Ranger Bob Casey concerning the fire. Love informs Casey that based on their analysis and findings, the fire is in prescription. Casey supports the analysis and recommends the fire be placed in prescription.

Soon after the Incident Plan is mailed to units in the BMWC (Bob Marshall Wilderness Complex). Love and Smith discuss the fire. Smith tells Love that he would like to fly the fire in the morning and then make their recommendation to Forest Supervisor Dale Gorman.

ERC (Energy Release Component) from the Gleason Fire Weather Station, the governing station for the Sun River Fire Management Unit is 34 on July 10 and 11, 1988. The 12-year average (3-day running mean) for the years 1973-1984 is 22 for these dates. The 90th percentile for Model G is 41. The accumulative precipitation from the Augusta and Choteau weather station for the period November 1987 through June 1988 is 55% of normal and 50% of normal respectively. The thousand hour fuels are 18%. These fuels are considered to be at critical levels of dryness when the fuel moisture reaches 12%.

The size of the fire is a spot. See Appendix B for daily fire weather and fire size.

MISSOULA FIRE WEATHER FORECAST-JULY 11, 1988

TODAY..
WEATHER: VARIABLE CLOUDINESS. WIDELY SCATTERED SHOWERS/FEW THUNDERSTORMS THIS AFTERNOON.
LAL: 2-3 CWR: 10 TO 20
MAXIMUM TEMPERATURES: 80 TO 90
MINIMUM HUMIDITIES: 15 TO 25 PCT
SURFACE WINDS: SE TO SW 5 TO 10 WITH 10 TO 20 EXPOSED AREAS AFTERNOON.
FREE AIR WIND: SW 15 TO 20.

TONIGHT:
WEATHER: PARTLY CLOUDY. WIDELY SCATTERED SHOWERS/FEW THUNDERSTORMS.
LAL: 3-4 CWR: 20 TO 30 PCT.
MINIMUM TEMPERATURES: MOSTLY 50S.
MAXIMUM HUMIDITIES: 70 TO 80 PCT WITH 45 TO 55 PCT UPPER SLOPES/RIDGES
SURFACE WINDS: W TO NW 5 TO 10 WITH 10 TO 25 MORE EXPOSED AREAS.
FREE AIR WINDS: SW TO W 20.

TOMORROW: TUESDAY
WEATHER: PARTLY CLOUDY. FEW THUNDERSTORMS
LAL: 3-4 CWR: 30 TO 40 PCT
MAXIMUM TEMPERATURES: 70S
MINIMUM HUMIDITIES: 25 TO 35 PCT
SURFACE WINDS: WEST 15 TO 25 MPH EXPOSED AREAS.
FREE AIR WINDS: W TO SW 25.

3-5 DAY OUTLOOK: WEDNESDAY THROUGH FRIDAY
MOSTLY WARM AND DRY. HIGHS: 80S WARMING INTO 90S LOWER ELEVATIONS.
LOWS: 40S AND 50S.

LONG RANGE FORECAST: (THE FOLLOWING IS BASED ON PHONE CONVERSATIONS WITH THE NATIONAL WEATHER SERVICE IN MISSOULA AND GREAT FALLS ON 9/28/88)

Though the 90 day chart indicates below normal temperatures and near or slightly above normal precipitation for the period July through September 1988, the consensus is that these charts can not be relied upon. The general feeling can best be summed up by paraphrasing Mike Ord, head weather forecaster for the Great Falls office. "According to climatology, the norm is to dry out rapidly from the first to mid-July through August. It is hard to get much precipitation until about mid-September."

The Benchmark Remote Area Weather Station (RAWS) is located 22 air miles south of the Gates Park Prescribed Fire. Elevation of the fire is 6200 feet on a southeast facing slope. The Benchmark RAWS station is at 5,350 feet on a level bench.

BENCHMARK RAWS 7/11/88

TIME	READING
1246-1446	MAX. TEMP. 82°
1346	MIN. R/H 26%
1746	MIN. 1 HR 5%
0446-0646	MAX. R/H 100%

WILDERNESS FIRE MANAGEMENT
INCIDENT PLAN

Fire Management Area RM 10 Bob Marshall Date July 12, 1988-2
National Forest Lewis & Clark Ranger District Rocky Mtn

A. General Information-- GATES PARK
1. Map showing projected perimeters.--ON FILE
2. Burned Area expected under serious conditions.
   a. Total Acres 1800 acres
   b. Miles of Perimeter 8
3. Burned area expected under present foreseeable conditions.
   a. Total Acres 320
   b. Miles of Perimeter 2
4. Location
   a. Legal SW ¼ NW ¼ Section 25 T. 24N R. 11W
   b. General 2 miles NW of Gates Park Cabin
   c. Prominent Landmarks between Red Shale Creek & Gates Creek
5. Present Size spot
6. Fuel Type Spruce Fuel Model G
&. Habitat Type 730 Cover Type spruce/AF Land Type Vc

B. Other Information
1. Monitoring Requirements Beartop lookout, Gates Park Guard Station, & aerial fire patrol, close monitor due to fuels & weather.
2. Possible Smoke Problems - Project for Life of Fire North Fork Sun, possible smoke hanging in drainage.
3. Fire Weather/Fire Behavior Forecasts Max temp 80's, min temp 50's max RH 70-80, winds W NW @5-10. 3-5 day outlook: Warm & dry, highs 80's, lows 40-50.
4. Projected Prognosis of Weather and Fire Season Mid June-Mid July. Temps near normal, precip below normal. Projected outlook next 45 days: hot & dry, little precip.
   BENCHMARK 1000 HR/7/88=66 LINCOLN 1000 HR/7/88=14
5. Fire Administration Cost Estimate $2500.00 if no confinement or containment is needed.

C. Decision Criteria
1. Prescription Concerns Continuous fuels over large area, 1000 hour fuels are lower than normal, time of year w hot temps & dry weather, preserving recreational opportunities.
2. Fire Load
   a. Forest One fire going, Kings Hill RD

b. Region Low-Mod, preparedness level 1

3. Area Boundaries or Private Property no private property, Flathead NF

4. Public Safety None anticipated, 1 1/2 miles W of trail #110, approx 2 miles NW of Admin site, 1 mi from trail 161

5. Smoke Effects
   a. On Site ridgetop to midslope
   b. Sensitive Areas Upper N. Fork Sun R. drainages, Gates Park

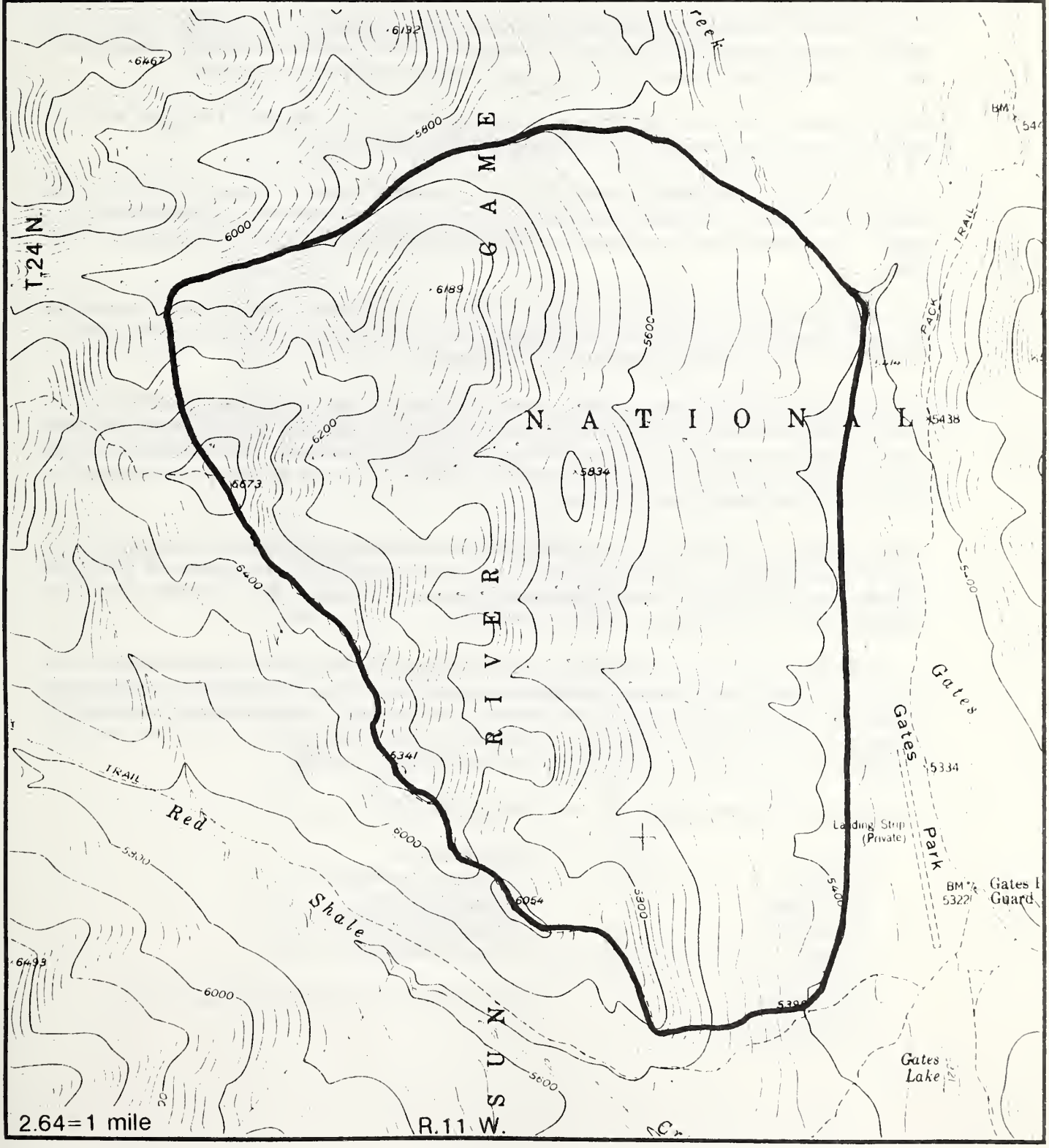
6. Soil and Water
   a. On Site None
   b. Off Site pond: 1 1/2 mile east

7. Political/Social Atmosphere
   a. Local Public support
   b. Regional or National support

D. Action Alternatives
1. Possible Control Lines Foot trail 161 on SW, tributary to gates Cr. on the N, fuel break W of Gates Park airstrip
2. Access
   a. Roads None
   b. Helispots nearest is Gates Park airstrip apprx 1 1/4 mile E
3. Present and Projected Crew Needs None present, project 20 person smokejumper crew, equipped.
4. Cost Alternatives $8000.00 for initial attack with jumpers

E. I&I
1. Contacts
   a. Media Forest PAO will be contacted for standard notifications.
   b. Residents-Users, etc. Outfitters in the area will be contacted by district.
2. Specific Issues None

MAP 3 7/12/88 Projected Perimeter



7/12/88 Tuesday

At 0730, Kamrud reports to Choteau that smoke from the fire is visible at Gates Park. At 0815 Smith notifies Forest Supervisor Dale Gorman that the Forest has a fire in the Bob Marshall Wilderness which may go to prescription. Gorman agrees to make a decision after Smith flies the fire.

At 0900, Kamrud and Forrest again attempt to reach the fire. Smith notifies Walt Tomascak, Regional Fire Use Specialist and checks on the availability of monitoring funds.

At 1120, Smith and Anita Dezort locate the fire from the patrol plane (36 Romeo). The fire is barely visible at the time. At 1330, Smith meets with Love at Choteau and discusses his observations. It is Smith's opinion that the fire is in prescription. He will meet with the Supervisor upon returning to Great Falls.

At 1410, Beartop Lookout notifies Kamrud and the District that the fire is becoming active. Some trees are crowning and a convection column is building. Kamrud and Forrest again attempt to reach the fire. At 1419, they reach the fire on the ground for the first time.

At 1430, Smith meets with Gorman. They review public safety, public information, potential based on current burning conditions, and status of Forest and Regional resources. Gorman agrees with Bob Casey's recommendation and the Gates Park Fire is placed in prescription. Smith contacts Love and tells him of the Supervisor decision. Love relays the message to Kamrud. All administrators of the Bob Marshall Wilderness Complex are notified.

At 1546, Kamrud suggests an FBA (Fire Behavior Analyst) be included in the monitoring plan. At 1555, Kamrud recommends a patrol flight be set up as soon as possible for observation. At 1600, Love contacts Smith concerning a patrol flight and suggests an FBA be included if possible. A Spot Fire Weather Forecast request is sent to Great Falls Dispatch.

At 1634 Smith is enroute to Lincoln to pick up Byron Bonney (FBA) to fly the fire. At approximately 1800, they are over the fire and Smith estimates the fire to be 40 acres in size with another 10 acres affected by spotting. At approximately 1900, Smith, Bonney, Love and Casey discuss the fire. The consensus is that the fire is well within prescription. Casey asks Bonnie to prepare a 30 day Fire Behavior Prediction for review. Kamrud is notified by radio of the team's findings.

The following Outfitters and Agencies are notified of the fire:

Outfitters
Dick Klick
Max Barker
Chuck Blixrud
Al Haas
Art Stevens
Chip Gollahon
Lee Carlbom

Agencies
Teton County Sheriff
Spotted Bear RD
Great Falls Tribune
Local TV Stations

SPOT FORECAST FOR GATES PARK--1830 PM MDT, TUESDAY JULY 12,1988

1. DISCUSSION: RATHER STRONG WESTERLY FLOW WILL CONTINUE OVER AREA WITH COOL AND STABLE AIR-MASS. BROAD LOW PRESSURE OVERHEAD WITH LIMITED MOISTURE.

2. FOR THE FIRST BURN PERIOD...TONIGHT
   A. WEATHER...MOSTLY CLOUDY...FEW SPRINKLES OF RAIN
   B. CWR...ZERO
   C. TEMPERATURE...COOLING INTO MID 30S TONIGHT
   D. HUMIDITY...RISING TO NEAR 80% AFTER DARK
   E. WIND...EYE LEVEL...SW TO NW 15 TO 20 BECOMING 5 TO 15 MPH AFTER DARK WITH A FEW GUSTS NEAR 20

3. FOR THE SECOND BURN PERIOD...WEDNESDAY
   A. WEATHER...PARTLY CLOUDY TO CLOUDY
   B. CWR...ZERO
   C. TEMPERATURE...NEAR 34 AT SUNRISE...RISING TO MID 40S BY AFTERNOON AND AFTERNOON HIGH NEAR 54
   D. HUMIDITY...NEAR 80% AT SUNRISE...AFTERNOON MIN 45 TO 50%
   E. WIND...EYE LEVEL...VARIABLE 4 TO 8 MPH EARLY MORNING BECOMING SW TO NW 10 TO 15 WITH GUSTS NEAR 25 AT TIMES THIS AFTERNOON DARK WITH A FEW GUSTS NEAR 20

4. OUTLOOK FOR FOLLOWING BURN PERIOD...WED NIGHT AND THURS PARTLY CLOUDY AND COOL WITH DIMINISHING WIND WED NIGHT...WARMER AND DRYER ON THURSDAY WITH 5 TO 15 MPH WINDS

BENCHMARK RAWS 7/12/88

TIME	READING
1246-1746	MAX. TEMP. 61°
1346	MIN. R/H 31%
1246-1346	MIN. 1 HR 5%
2346 (on 7/11)	MAX. R/H 76%

BEARTOP LOOKOUT WEATHER

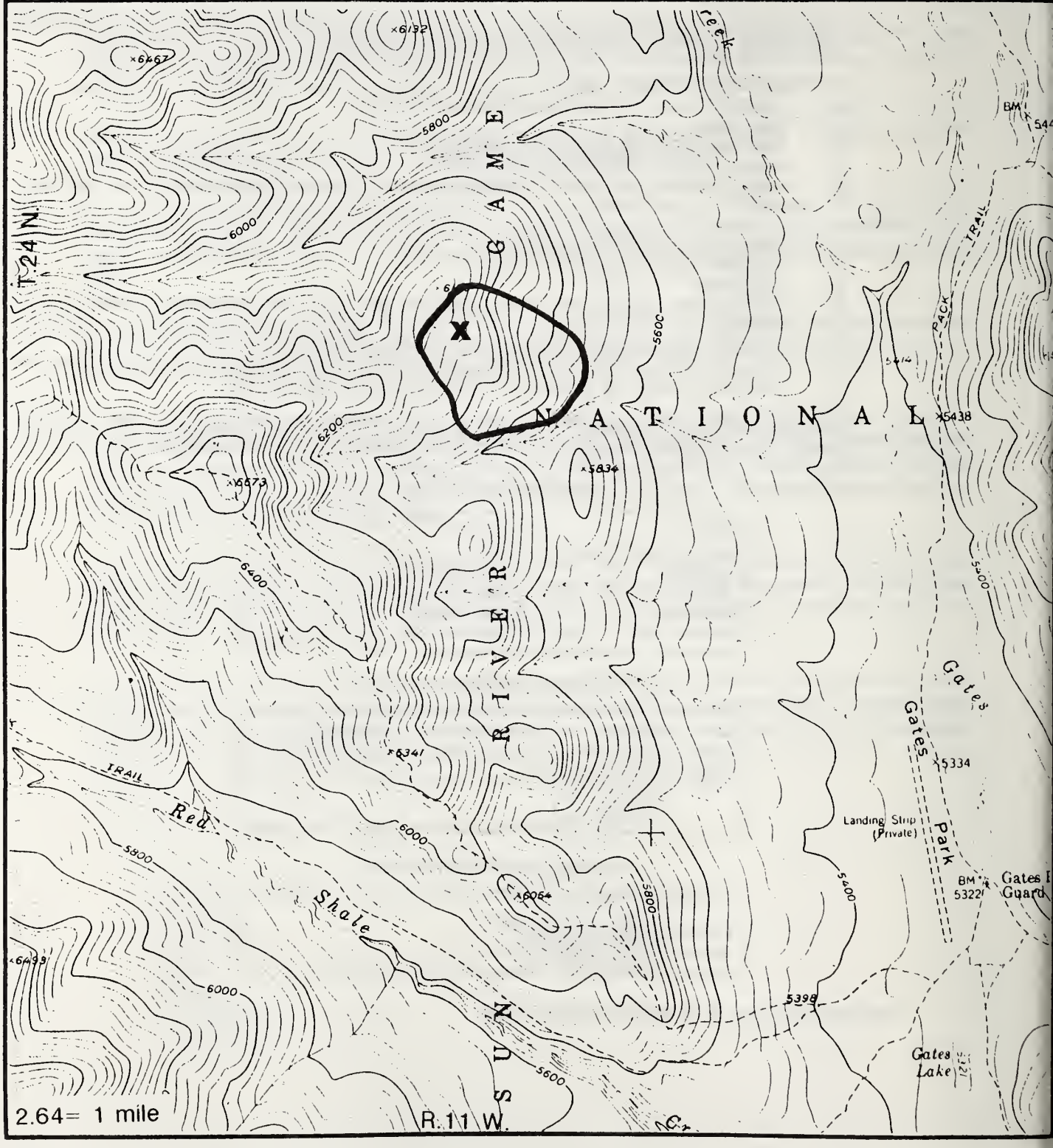
TIME	WIND	CLOUD COVER	REMARKS
1400	5-10 MPH, GUSTS TO 20 MPH	.8	

GLEASON FIRE WEATHER STATION

ERC 34 (10-Year average 23) Thousand hour fuel moisture 17%

The size of the fire is 60 acres including spots.

MAP 4 — 7/12 Fire Perimeter



7/13/88 Wednesday

At 0815, Kamrud contacts the District and informs them the fire is putting up smoke but otherwise is relatively inactive.

At 1400, Bonney contacts Love and tells him that he will have the 30-day Projections prepared this PM. Arrangements are made for an 1830 briefing. Bonney, Smith, Casey, Kamrud, Butch Fitzpatrick, Resource Advisor, and Love meet at the District Office in Choteau to discuss the Gates Park Fire and review Bonney's 30-day Fire Behavior Projections (to August 15). They amend the Incident Plan (Section D, Action Alternatives):

> The fire has been advancing west in Fuel Model G (subalpine fir) as projected. Any movement towards the east should be minimal due to an abrupt transition in Fuel Model H (8) young lodgepole pine.
>
> In the event the fire spreads eastward, it should be contained at or west of Gates Creek as shown on the Containment Strategy Overlay.
>
> In order to contain the fire, it is estimated that a 20-person smokejumper crew or one Category I crew will be required. In addition, at least two Mark III pumps with hose will be packed into Gates Park. Retardent will be dropped as necessary.
>
> Byron Bonney will remain as the Fire Behavior Analyst for the fire.

BENCHMARK RAWS 7/13/88

TIME	READING
1746-1946	MAX. TEMP. 69°
1746-1846	MIN. R/H 45%
1346-1846	MIN. 1 HR 7%
0546-0946	MAX. R/H 71%

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
0815	LITTLE WIND	100%	TRACE PRECIP
1355	7-12 MPH W/GUSTS TO 20 SW	.9	
1655	CALM	DECREASING	

GLEASON FIRE WEATHER STATION

ERC up to 39. 10-year average for July 13 is 23. Thousand hour fuel moisture is 16%

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
1345				5 MPH GUSTS TO 20 - SW	.9 CLOUDS
1526	60			CALM	.9 CLOUDS

The forecast is for sunny and warmer with highs in the 80s for July 14-17.

The fire has been relatively inactive all day with very little change in size.

Gates Park Fire. K. Westly Photo

7/13/88

GATES PARK FIRE
Bob Marshall Wilderness Prescribed Fire

Rocky Mountain Ranger District
Lewis & Clark National Forest

FIRE BEHAVIOR PROJECTION NARRATIVE

On 7/12/88 the Gates Park prescribed fire was about 40 acres. I flew this fire at approximately 1800 hours with Dick Smith and we witnessed fire spread to be to the East. The spread has slowed considerably from earlier in the afternoon on the 12th. Earlier this afternoon the fire was making crowning/torching and spotting runs in what looked like old growth alpine fir, spruce and lodgepole timber. Spotting was occurring about 400 yards ahead (1/4th mile) of the main fire front. Active torching was still occurring along the West side of the fire and the fire was backing into the wind upslope. There were a few spots downhill form the South flank of the fire above the small drainage.

There was a definite timber type difference noted to the East of the fire. This area looked like a young lodgepole stand that was established about 60-70 years ago. It is probably much like many of the young lodgepole stands that I am familiar with on the neighboring Lincoln Ranger District. Typically these stands do not have any ground fuel with the exception of a light covering of something like grouse whortleberry or beargrass. These stands are usually not a contributor to a fire's forward rate of spread, as a matter of fact will actually retard spread unless a very extreme condition exists.

The following guidelines and assumptions were used to predict the fire's spread over the next thirty day period (July 14 thru August 15th):

1. Any backing or forward ROS in the young LP stand will be minimal and a Fuel Model 8 will be used.

2. Fuel Model 10 will be used for the fuels that the fire is currently burning in and any old growth stands to the West, South and North of the current fire area that are not typed as FM8.

3. Weather to be used: July 13-14 - Strong westerly flow with strong winds. July 15-22 - High pressure to set in with a decrease in gradient wind and normal upslope/upcanyon winds in the afternoon. July 23-25 - For 3 day period I figured a return to a strong westerly/southwesterly flow with continued warming and drying. July 26-30 - Back to normal upslope/upcanyon winds with continued warming and drying. August 1-15 - Same as for previous period.

4. If fire spread does stay to the East then the fire will run up against the fuel model 8 (young LP stand) and this stand will retard the forward ROS. The fire will only be a light ground fire at this time. It will not get into the crowns unless very extreme burning conditions exist, i.e., 40+ mph winds, 2-3% one-hour fuel moistures, 90 degree + temps, <15% relative humidities.

5. Normal end to the fire season due to beginning of fall rainy season would be around August 25th.

6. Projections are for a 3 hour period during the day (1500-1800).

7. Generally speaking spotting will not add to the forward ROS of the fire.

8. At this time there is not an extreme worst case scenario put together.

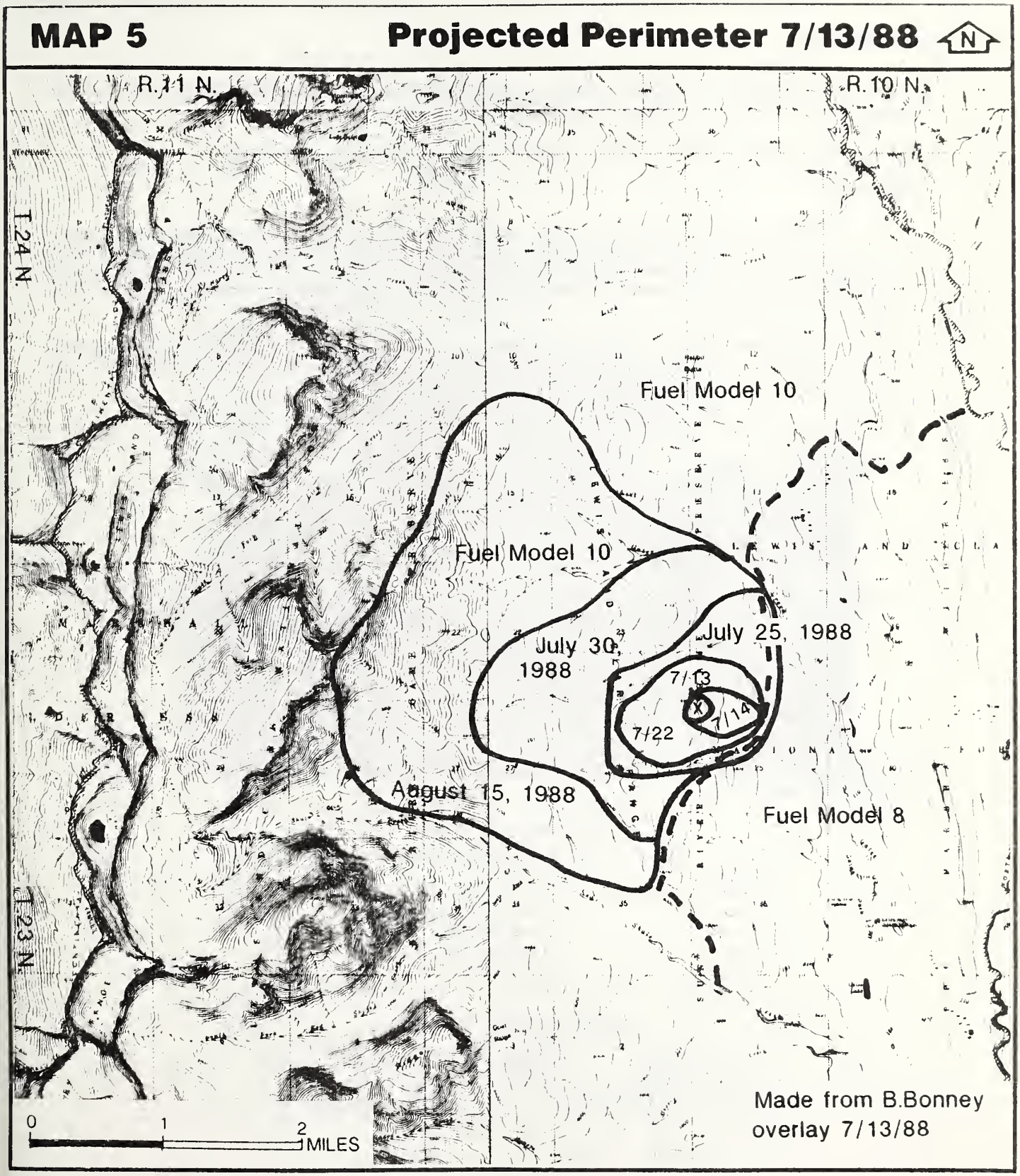
9. Spread to the West further than what the projection map shows would be up towards the Chinese Wall and this would be the extent of the extreme-worst case spread to the West.

July 13, 1988
Byron J. Bonney
Fire Behavior Analyst

30-day Fire Projection

July 14, 1988	105 Acres
July 22, 1988	400 Acres
July 25, 1988	660 Acres
July 30, 1988	1,800 Acres
August 15, 1988	5,100 Acres

Looking west at the fire on the afternoon 7/12


MAP 5
Projected Perimeter 7/13/88
N
R.11 N.
R.10 N.
T.24 N.
T.23 N.
Fuel Model 10
Fuel Model 10
July 30, 1988
July 25, 1988
7/13
7/14
7/22
August 15, 1988
Fuel Model 8
0
1
2
MILES
Made from B.Bonney overlay 7/13/88

7/14/88 Thursday

Light rain is received on fire in the morning with light drizzle until about noon. Gates Park reports receiving .01 inches of precipitation. The fire remains inactive.

MISSOULA FIRE WEATHER OFFICE AFTERNOON FORECAST 3:30 PM THURSDAY JULY 14, 1988

DISCUSSION...

1. TERRIBLE RECORD OF FORECASTERS AND FORECAST MODELS LEAVES YOUR HUMBLE PROGNOSTICATOR IN A BIT OF A QUANDARY TODAY... DO WE BELIEVE THAT IT WILL REALLY CLEAR UP AS MODELS AGAIN INDICATE, OR STICK WITH PERSISTENCE AND KEEP MOST OF THE AREA IN THE CLOUDS??? SINCE IT REALLY IS SUMMER, WILL LEAN TOWARD THE CLEAR UP ASPECT AND HOPE TO GET IT RIGHT THIS TIME!!! FOR THOSE OF YOU WHO HAVE TO READ THIS OVER THE RADIO, PARAGRAPH 2 IS A MORE SUCCINCT DISCUSSION OF THE WEATHER...

2. WEAK FRONTAL SYSTEM MOVED TO NEAR THE CONTINENTAL DIVIDE THIS AFTERNOON. RADAR SHOWS RAIN HAS STOPPED FOR THE MOST PART. LATEST FORECASTS INDICATE A DRYING TREND IN STORE... WILL HOPE THEY ARE RIGHT THIS TIME!!!

ZONES: 101, 102, 104, 105, 106 WEST OF THE DIVIDE, 108

THIS EVENING AND TONIGHT..
WEATHER: MOSTLY CLOUDY WITH A SLIGHT RISK OF RAIN, SOME CLEARING AFTER 11PM.
LAL: 1 CWR: 10-20%
MINIMUM TEMPERATURES: 45-55
MAXIMUM HUMIDITIES: NEAR 100%
SURFACE WINDS: VARIABLE 3-5 MPH

THURSDAY...
WEATHER: PARTLY CLOUDY, A LITTLE MORE CLOUDINESS AND A SLIGHT RISK OF SHOWERS IN ZONE 101
LAL: 1 CWR: 10-20%
MAXIMUM TEMPERATURES: 70-80
MINIMUM HUMIDITIES: 30-40%
SURFACE WINDS: WESTERLY 4-8 MPH
FREE AIR WINDS: WESTERLY 15 MPH

OUTLOOK FOR FRIDAY...
PARTLY CLOUDY AND WARMER. HIGHS MOSTLY LOW 80S, HUMIDITIES 25-35%
WINDS SLOPE TYPE 4-8 MPH.

BENCHMARK RAWS 7/14/88

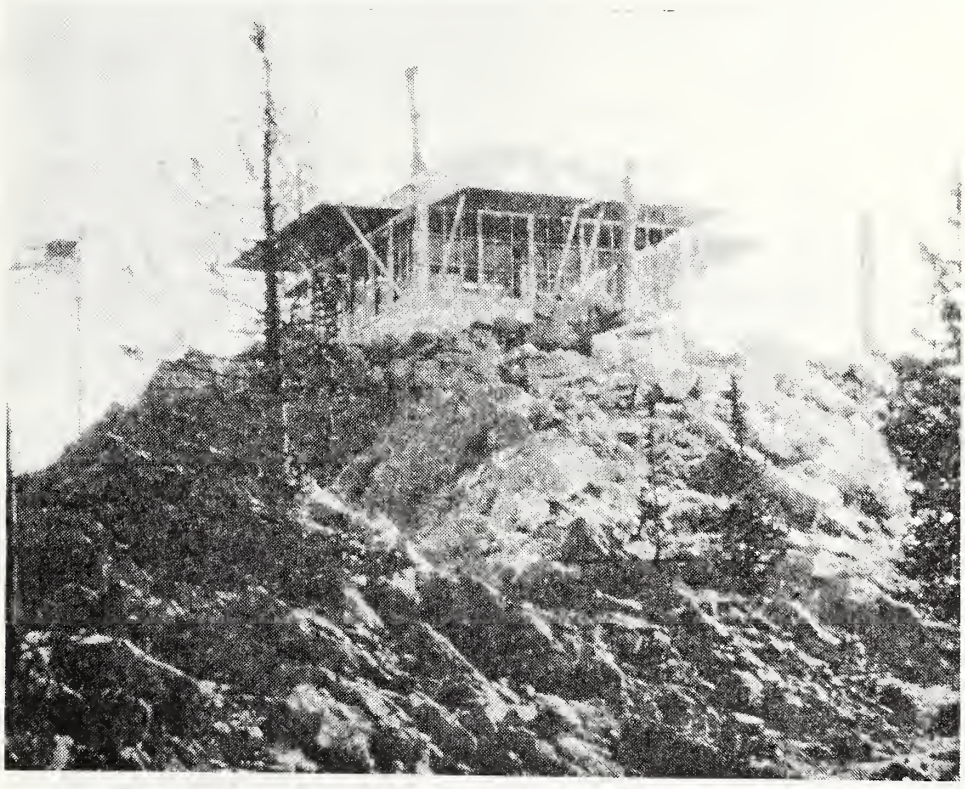
TIME	READING
1646 1846 1646 0946	MAX. TEMP. 65° MIN. R/H 42% MIN. 1 HR 6% MAX. R/H 88%

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
1400 1645	3-5 MPH W 5-10 MPH NW	.5 .5	.02 INCHES RAIN

GLEASON FIRE WEATHER STATION

ERC drops to 37 and thousand hour fuels remain at 16%
The 10-year average ERC for this date is 25



Beartop Lookout. W. Jaeger, Jr. Photo

7/15/88 Friday

The fire remains inactive until about 1500. At this time Beartop Lookout reports that the northwest end of the fire is forming a convection column.

BENCHMARK RAWS 7/15/88

TIME	READING
1746 1246 1546 0246-0646	MAX. TEMP. 73° MIN. R/H 23% MIN. 1 HR 5% MAX. R/H 100%

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
1405	10 MPH SW	.5	

GLEASON FIRE WEATHER STATION

ERC is 38. The 10-year average is 25. Thousand hour fuels remain at 16%

The size of the fire is 90 acres.

7/15/88 - 1100. W. Jaeger, Jr. Photo

7/16/88 Saturday

Beartop Lookout reports an increase in fire activity about 0900. At about 1645, he reports major activity with a "mushroom cloud" over the fire. Kamrud, at the fire, reports the fire burning toward the west to northwest with the main spread upslope as predicted. The fire is burning in fuel model G (model 10), but not in model H (model 8). Whenever the fire hits the boundary between the two types, it stops. With the westerly to southwesterly free air wind, people coming over Headquarters and Route Creek Pass will experience smoke on the west side, but otherwise there is good smoke dispersion. Smith is notified that the fire is behaving as predicted in terms of rate and direction of spread.

Spot Weather Forecast Information:

Dry Bulb - 73
Wet Bulb - 52
Relative Humidity - 24%
Winds - 4-5 out of the west
No clouds.
No buildups, so we have 100% radiation in terms of solar radiation.

SPOT WEATHER FORECAST FOR GATES PARK FIRE
ISSUED BY THE NATIONAL WEATHER SERVICE AT GREAT FALLS: 7/16/88 1845

DISCUSSION: WESTERLY FLOW ALOFT OF DRY STABLE AIR WILL CONTINUE OVER AREA THROUGH SUNDAY. A WEAK DISTURBANCE WILL MOVE OVER THE AREA SUNDAY NIGHT AND MONDAY, GIVING A NORTHWEST FLOW ALOFT WITH LITTLE MOISTURE.

FORECAST FOR TONIGHT:
SKIES CLEAR
WEATHER: NONE
MINIMUM TEMPS: 38-42
HUMIDITY RECOVERY: TO 75% BY DAYBREAK
WINDS: DOWNSLOPE AT 5 MPH AFTER DARK.

FORECAST FOR SUNDAY:
SKIES CLEAR AT FIRST WITH INCREASING HIGH CLOUDINESS BY AFTERNOON.
WEATHER: NONE
MAXIMUM TEMP: 75
MINIMUM HUMIDITIES: 30-35% BY MID-AFTERNOON
WINDS NORTHWEST INCREASING TO 10-15 MPH BY AFTERNOON

OUTLOOK FOR SUNDAY NIGHT:
MOSTLY HIGH CLOUDS WITH WINDS FROM 10 TO 20MPH AT TIMES. POSSIBILITY THAT THE PREDICTED DISTURBANCE MAY GENERATE WINDS OF GREATER SEVERITY. A NEW FORECAST REQUESTED TOMORROW SHOULD BE MORE DEFINITE.

BENCHMARK RAWS 7/16/88

TIME	READING
1546-1746	MAX. TEMP. 76°
1646	MIN. R/H 20%
1546-1846	MIN. 1 HR 4%
0446-0646	MAX. R/H 100%

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
1430	3-5 MPH W	.3	

GLEASON FIRE WEATHER STATION

ERC is 38. The 10-year average is 26.
Thousand hour fuels are still 16%

The size of the fire is 120 acres.

7/16/88 Close up of fire.

7/17/88 Sunday

At 1005, Kamrud calls Choteau to report the following information:

At 0900, the fire was actively burning with 90% of the perimeter active. The fire is burning clean due to the reburning.

Fire spread is to the west to northwest, generally burning upslope. Winds are upslope at 7 mph.

The fire is burning in fuel model G (old growth subalpine fir) with no burning in model H (young lodgepole pine).

There are 2 spots actively burning 200-300 yards northeast of the main fire, but they are not expected to cause any problems.

The fire has reached top of ridge and has the potential to start burning down the back side.

Kamrud recommends that the Incident Plan (D. Action Alternatives Section) be updated to include the containment strategy and suppression needs (two pumps with hoses and a Type I crew if needed).

At 1030, Kamrud contacts Choteau to forward information for a special Fire Weather Forecast.

TEMP: 66°
R/H: 35%
WINDS: west at 5 to 7 mph
Occasional trees torching

At approximately 1155, the special fire weather forecast is received and transmitted to Kamrud.

1. DISCUSSION: HIGH PRESSURE NOW FORMING OVER THE NORTHERN ROCKIES FOR WARM AND DRIER WEATHER. INITIALLY SOME WEST WINDS TODAY TURNING NORTH TONIGHT AND LIGHT EASTERLY MONDAY. AIR IS DRIER ALOFT AND HUMIDITY RECOVERY NOT AS GOOD NEXT SEVERAL NIGHTS.

2. FOR TODAY.....
   A. WEATHER...SUNNY TO PARTLY CLOUDY
   B. CWR... BELOW 10%
   C. TEMPERATURE.. HIGH 75
   D. HUMIDITY... LOWEST 21%
   E. WIND..EYE LEVEL.. WEST TO NORTHWEST 5 TO 15 MPH

3. FOR TONIGHT.....
   A. WEATHER...CLEAR
   B. CWR...BELOW 10%
   C. TEMPERATURE...LOWEST 49
   D. HUMIDITY... RECOVERY TO 52%
   E. WIND..EYE LEVEL.. LIGHT NORTHERLY 5 TO 10 MPH

4. OUTLOOK FOR MONDAY AND TUESDAY....
   SUNNY AND VERY WARM AND DRY. HIGHS IN THE UPPER 70S NIGHTS IN THE LOW 50S. LOW HUMIDITY...AFTERNOONS 15% RECOVERING TO 45% AT NIGHT. WIND VARIABLE 5 TO 12 MPH.

5. EXTENDED OUTLOOK VERY WARM AND DRY MID WEEK.

At 1545, Kamrud contacts Choteau to report he is looking into the Gates Park Fire from Sock Lake and recommends the District close Trail No. 161 to all users for safety reasons because it had not been cleared in several years. He states the free air wind is blowing from the north and feels the fire will continue to make runs in the afternoon from approximately 1500 to 1900.

During the afternoon, Ernie Nunn, Supervisor of the Helena National Forest, flew the fire with the Governor.

At 1700, Beartop reports the northeast flank of the fire is burning down the eastslope. The northeast corner of the fire is most active. Kamrud asks to be advised if the fire burns into fuel model H.

At 1827, Kamrud reports the east side of fire has not threatened to cross over Gates Creek. Patrol plane 36 Romeo reports flame lengths of 50 feet on west side of fire.

At 2130, Kamrud reports the fire is still burning. Humidity recovery is slow as forecasted.

BENCHMARK RAWS 7/17/88

TIME	READING
1646	MAX. TEMP. 74°
1646	MIN. R/H 22%
0546	MAX. R/H 94%
1546-1646	MIN. 1 HR 4%

BEARTOP LOOKOUT WEATHER

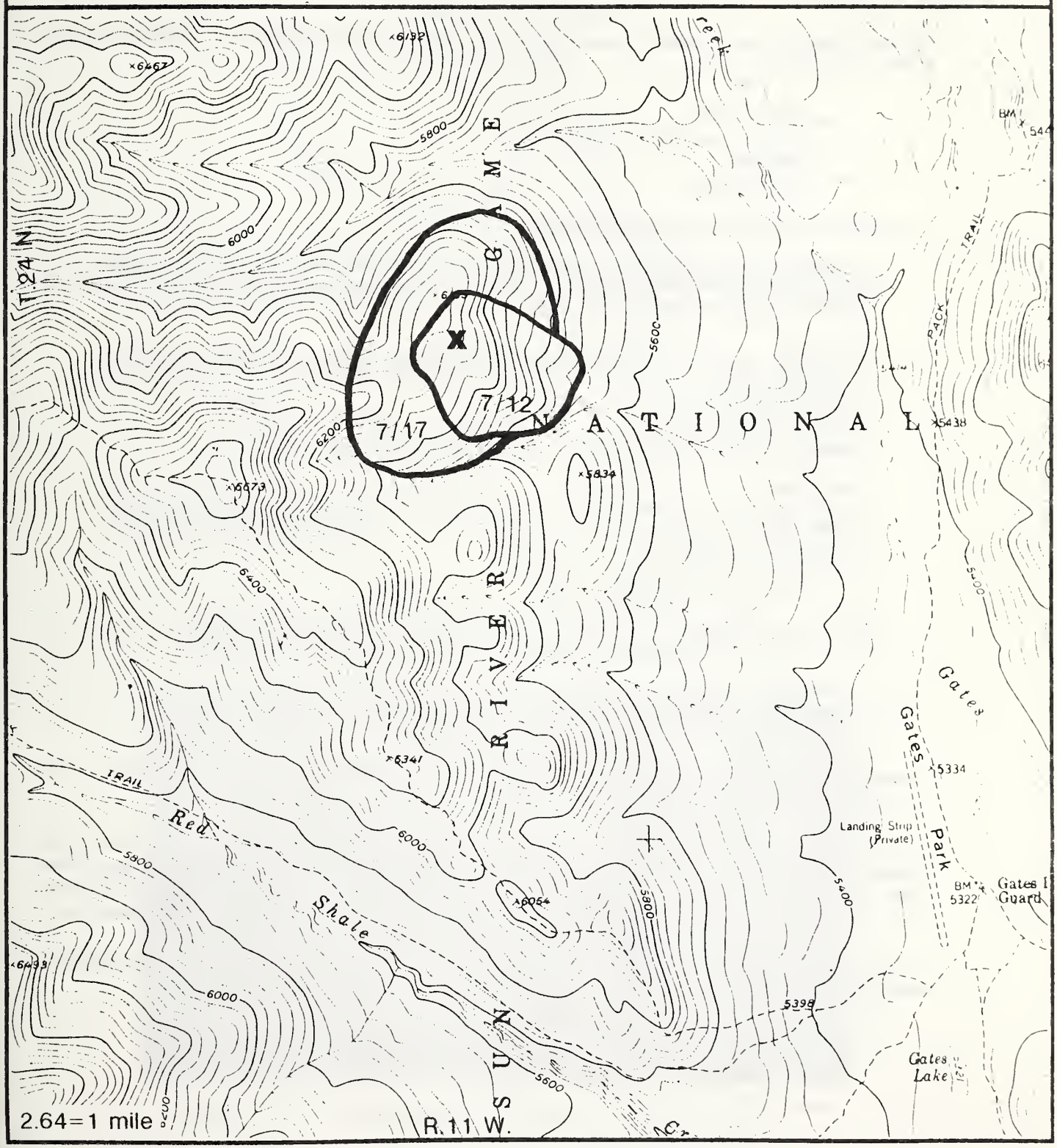
TIME	*WIND*	*CLOUD COVER*	*REMARKS*
1445	5-7 MPH W-SW	.3	

GLEASON FIRE WEATHER STATION

ERC reaches the 90th percentile at 41! (10-year average is 26 for this date. Thousand hour fuels still 16%.

Fire size is estimated at 165 acres.

MAP 6 — 7/17/88 Fire Perimeter



7/18/88 Monday

The fire is burning as projected in a westerly/northwesterly direction. Weather for a spot forecast is taken at 1000 hrs.

Partly Cloudy
Wind: 0-2 out of the North
Temp: 53°
Humidity: 61%

SPOT WEATHER FORECAST FOR THE GATES PARK FIRE

1. DISCUSSION: A VERY WEAK WEATHER DISTURBANCE WILL MOVE ACROSS EASTERN MONTANA TODAY. MOST CONVECTIVE ACTIVITY EXPECTED EAST OF YOU. HIGH PRESSURE ALONG THE WEST COAST WILL GET STRONGER AND MOVE EAST A LITTLE TUESDAY.

2. FOR TODAY...
   A. WEATHER... PARTLY CLOUDY. 10% CHANCE OF AFTERNOON THUNDERSTORMS AT THE FIRE SITE.
   B. CWR... BELOW 10%
   C. TEMPERATURE..COOLER TODAY...MAX 68-71
   D. HUMIDITY... MIN 25-30%
   E. WIND..EYE LEVEL.. WEST 5-10 MPH

3. FOR TONIGHT...
   A. WEATHER... PARTLY CLOUDY EARLY WITH A 10% CHANCE OF EARLY EVENING THUNDERSTORMS.
   B. CWR... BELOW 10%
   C. TEMPERATURE... MIN 46-49
   D. HUMIDITY... RECOVERY ONLY FAIR...MAX 60%
   E. WIND..EYE LEVEL.. NORTHWEST 2-6 MPH

4. OUTLOOK FOR TUESDAY...
   MOSTLY SUNNY AND WARMER. MAX TEMP UP 5, RH DOWN 5. WINDS MORE NORTHWEST.

5. AIR DISPERSION FORECAST:
   FAIR TO GOOD TODAY AND TONIGHT WITH WEST TO NORTHWEST WIND ALOFT 10-15 MPH.

A special order is prepared and signed by Forest Supervisor Dale Gorman restricting use on Trail No. 161 pursuant to Kamrud's request.

A news release concerning the Gates Park fire is prepared and sent to the *Choteau Acantha* and *Sun Valley Sun*. Bert Lindler from the *Great Falls Tribune* contacts Love for an update on the fire. Others who are contacted on the fires update include: Bureau of Indian Affairs, Glacier National Park, Montana Fish, Wildlife and Parks, 7 Lazy P Guest Ranch, Circle 8 Guest Ranch, and Nature Conservancy.

As of 1630 the fire is most active in the southwest corner. The area has received a trace of precipitation and wind is light out of the north.

BENCHMARK RAWS 7/18/88

TIME	READING
1146	MAX. TEMP. 68°
1246	MIN. R/H 31%
1146-1846	MIN. 1 HR 7%
0546-0646	MAX. R/H 100%

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
1530	CALM	.8	

GLEASON FIRE WEATHER STATION

ERC is at 39. (10-year average 27)
Thousand hour fuel moisture still 16%

Not much change in fire size.

7/18/88 - 0740 - The Gates Park Fire is one week old. W. Jaeger, Jr. Photo

7/19/88 Tuesday

At 0800 Gates Park reports the low temperature last night was 27 degrees with heavy frost. The weather is now clear and calm.

SPOT FORECAST FOR...GATES PARK FIRE 11.15 AM TUESDAY JULY 19, 1988

1. DISCUSSION:
   HIGH PRESSURE OVER THE AREA. EASTERLY WINDS OVER THE PLAINS RESULTING IN UPSLOPE CUMULUS CLOUDS ALONG THE ROCKY MOUNTAIN FRONT. EASTERLY LOW LEVEL WINDS WILL CONTINUE THRU WEDNESDAY. WEAK FRONTAL SYSTEM ON THURSDAY WILL CAUSE WIND SHIFT AND BRING SLIGHT RISK OF CONVECTIVE ACTIVITY.

2. FOR TODAY...
   A. WEATHER...PARTLY CLOUDY..30% TO 60% CUMULUS CLOUD COVER
   B. CWR... ZERO
   C. TEMPERATURE..1PM 70, AFTERNOON HIGH 78
   D. HUMIDITY... 1PM 38%, AFTERNOON MIN 27%
   E. WIND..EYE LEVEL..UPSLOPE 5-10 1PM TIL 6PM, GUSTY HIGHER EXPOSED SLOPES

3. FOR TONIGHT...
   A. WEATHER...MOSTLY CLEAR BY 8PM
   B. CWR...ZERO
   C. TEMPERATURE...OVERNIGHT LOW 30-35
   D. HUMIDITY...RECOVERY TO 100% BOTTOMS, 65% UPPER SLOPES
   E. WIND..EYE LEVEL...LIGHT DOWNSLOPE BY 9PM, EASTERLY OVER HIGHER RIDGES 4-8

4. OUTLOOK FOR WEDNESDAY...
   PARTLY CLOUDY, CONTINUED DRY. HIGH 75-80, LOW HUM NEAR 25%. WINDS CONTINUING EASTERLY.

At approximately 1550 Patrol Flight 36 Romeo with Smith and Gorman reports 30 to 35% of the fire's perimeter is active and estimates the fire has grown by about 40 acres. Smith reports some active spots on the fire's northeast side, but he does not expect them to spread due to adjacent fuel types. There are a few spots east of the main fire--one is at least 1/2 mile away. With the hotter temps and change in wind from the southwest, the fire can be expected to make some substantial runs during the next few days.

A public meeting is scheduled in Choteau at 1900 on July 21 to discuss the Gate Park Prescribed Fire.

BENCHMARK RAWS 7/19/88

TIME	READING
1646	MAX. TEMP. 73°
1646	MIN. R/H 30%
1646	MIN 1 HR 5%
0146-0746	MAX. R/H 100%

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
1400	CALM	.6	TRACE OF RAIN

GLEASON FIRE WEATHER STATION

ERC is at 39. (10-year average is 28)
Thousand hour fuel moisture is 16%

The fire is estimated to be 250 acres is size.

The Gates Park Fire continues to grow. W. Jaeger, Jr. Photo

7/20/88 Wednesday

At 1015, Beartop Lookout and Gates Park Monitor report that yesterday the west edge of the fire increased, especially the southwest corner. The skies are clear and winds calm and out of the west. The fire is putting off a gray column of smoke and some flames are visible.

SPOT FORECAST FOR...GATES PARK FIRE 13:45 PM WEDNESDAY JULY 20, 1988

1. DISCUSSION:
   HIGH PRESSURE OVER THE AREA. LIGHT EASTERLY FLOW ALOFT. WINDS SHIFTING TO WESTERLY LATE THURSDAY INTO FRIDAY. CONTINUED HOT AND DRY DAYS THROUGH FRIDAY.

2. FOR TODAY...
   A. WEATHER...CLEAR
   B. CWR...ZERO
   C. TEMPERATURE..1PM 75, AFTERNOON HIGH 82
   D. HUMIDITY... 1PM 35%, AFTERNOON MIN 22%
   E. WIND..EYE LEVEL..UPSLOPE 3-08 1PM TIL 6PM

3. FOR TONIGHT...
   A. WEATHER...CLEAR
   B. CWR...ZERO
   C. TEMPERATURE...OVERNIGHT LOW 35-40
   D. HUMIDITY...RECOVERY TO 75% BOTTOMS, 50% UPPER SLOPES
   E. WIND..EYE LEVEL...LIGHT DOWNSLOPE BY 9PM, EASTERLY OVER HIGHER RIDGES 4-8

4. OUTLOOK FOR THURSDAY...
   SUNNY CONTINUED DRY. HIGH 80-85, LOW HUM HEAR 20%. WINDS LIGHT MORNING, SHIFTING TO WESTERLY 10 TO 15 LATE AFTERNOON AND EVENING.

At approximately 1700, Brad McBratney, Range Technician, makes a patrol flight over Gates Park. He reports the fire active at the top, with 50-60 foot flames. The winds are from the northwest. There are 4 spots on the east edge, with smoke but no flames. McBratney indicates no change in the fire perimeter, as it burns close to the young lodgepole (Fuel Model 8).

BENCHMARK RAWS 7/20/88

TIME	READING
1546-1846	MAX. TEMP. 85°
1546	MIN. R/H 13%
1546	MIN. 1 HR 3%
0446-0646	MAX. R/H 100%

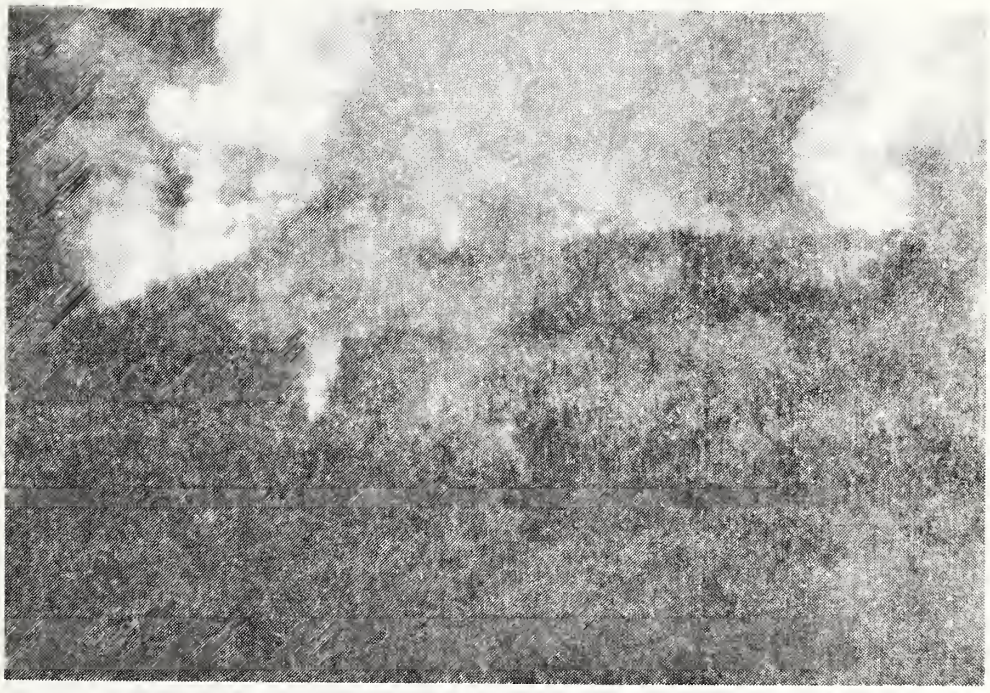
BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
1430	12-15 MPH-SW	CLEAR	

GLEASON FIRE WEATHER STATION

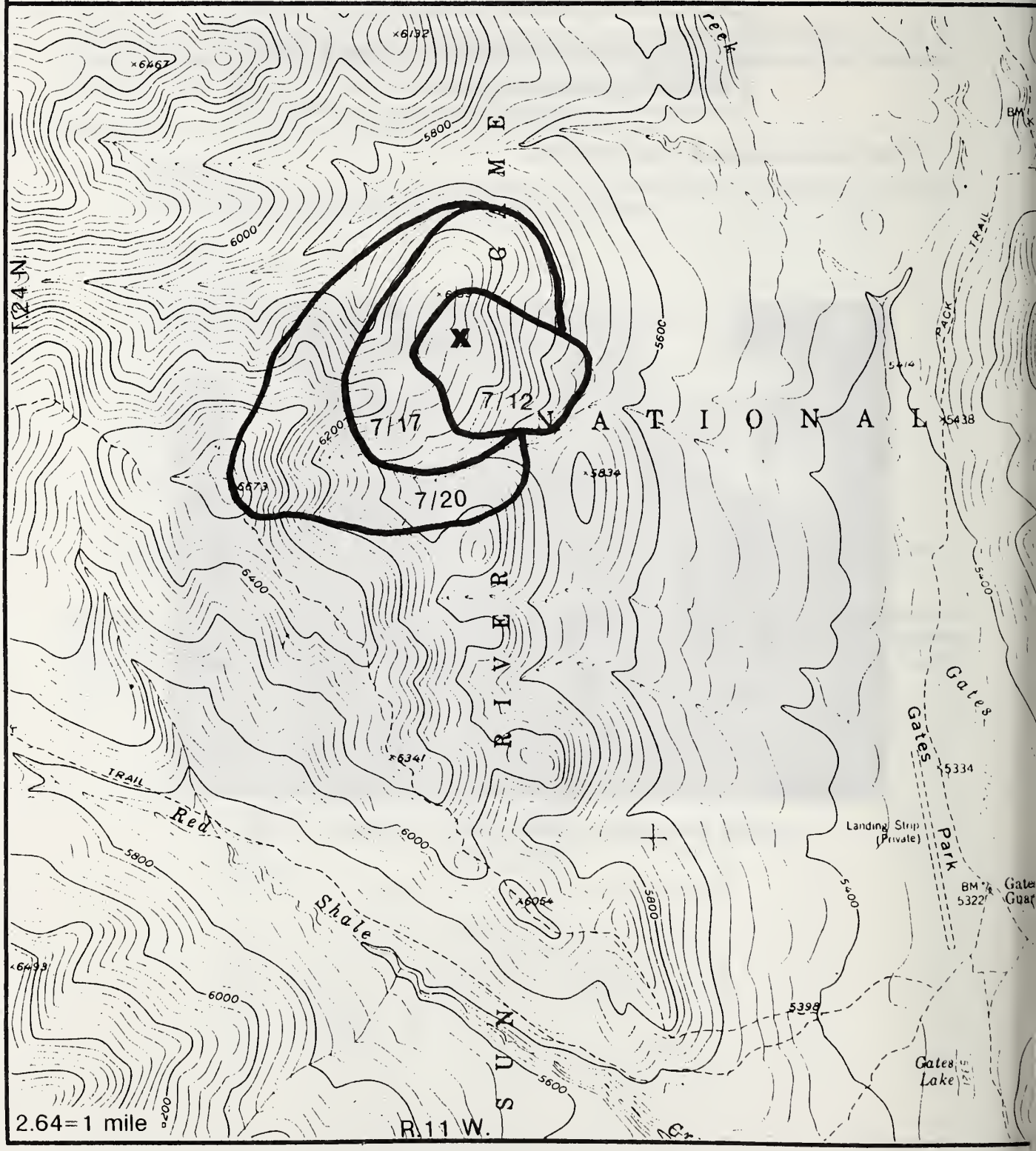
ERC again goes above the 90th percentile and is now 42. (10-year average is 29)
Thousand hour fuel moisture drops to 15.

Fire size is estimated at about 285 acres.



7/20/88 - SW perimeter became active. W. Jaeger, Jr. Photo

MAP 7 7/20/88 Fire Perimeter



7/21/88 Thursday

At about 0800, Ray Mills, Wilderness Ranger, reports a difference in weather at Gates Park. It feels much warmer and drier. The temperature is 60° at Gates Park and 63° at Beartop Lookout, and both report low visibility due to smoke.

The Fire Impact Analysis Team reviews McBratney's photos taken yesterday and feels original size estimates are too low. A recalculation is planned.

Data for spot weather forecast taken at 1035
Temp: 74°
Humidity: 31%
Wind: West 5 to 8
Clear Skies

SPOT FORECAST FOR...GATES PARK FIRE 11.15AM THURSDAY JUL.21, 1988

1. DISCUSSION:
WEAK UPPER AIR SYSTEM WILL MOVE ACROSS AREA THIS AFTERNOON. ONLY EFFECT WILL BE A SWITCH IN WINDS TO A WESTERLY COMPONENT... AIRMASS LOOKS DRY BUT A LITTLE COOLING EXPECTED BY SATURDAY.

2. FOR THIS AFTERNOON...
A. WEATHER...SUNNY AND HOT
B. CWR...ZERO
C. TEMPERATURE..1PM 82, AFTERNOON HIGH 87
D. HUMIDITY... 1PM 20%, AFTERNOON LOW 16%
E. WIND..EYE LEVEL...SW-NW 8-12, FEW GUSTS TO 18MPH THIS AFTERNOON

3. FOR TONIGHT...
A. WEATHER...CLEAR
B. CWR...ZERO
C. TEMPERATURE...MIDNIGHT 68, OVERNIGHT LOW 50
D. HUMIDITY...MIDNIGHT 30%, OVERNIGHT MAX 48%
E. WIND..EYE LEVEL..DECREASING TO WESTERLY 4-8 BY MIDNIGHT, DOWNSLOPE 3-5 BY 2AM

4. OUTLOOK FOR FRIDAY...
CONTINUED HOT AND DRY. HIGH MID 80S, LOW RH 15% WINDS WESTERLY 10-15MPH DURING THE AFTERNOON.

3-5 DAY OUTLOOK...SATURDAY THRU MONDAY...DRY..ALITTLE COOLER..WINDY

At approximately 1200 Beartop Lookout reports the fire advancing to the southwest.

At approximately 1350, Forrest, reports the fire advancing fast to the southwest with 90 to 100 foot flames.

1355 - Beartop reports active fire along the northeast perimeter with winds picking up at Gates Park and Beartop.

1608 - Forrest reports the fire might cross Trail #110.
1620 - The fire is active in the bottom of a ravine north of Gates Park.

1645 - Forrest reports the need to close Trail #110.

1650 - Kamrud states that they will suppress spots east of Gates Creek pursuant to incident plan. Forrest reports that it looks like a couple of spots are on the east side of Trail #110.

1700 - (Approximately), Kamrud orders 10 jumpers and 1 helicopter through Great Falls Dispatch to suppress spots.

1725 - Forrest reports that the winds have switched to the southwest. Kamrud asks if a plane could land at Gates Park - reply affirmative.

1730 - Forest Supervisor will close Trail #110.

1749 - Gates Park reports increasing fire activity, especially upslope to the east.

1752 - Kamrud calls Tomascak. Tomascak approves an additional $10,000 for monitoring.

1800 - Kamrud is advised that jumpers are not available. He will have to use District people. Great Falls Dispatch is checking on availability of MIF (Montana Indian Firefighter) crews.

1804 - Forrest reports the fire is now on the north end of Gates Ridge.

1839 - Gorman arrives at office in Choteau. Gorman approves suppression of the spots east of the containment line. MIF crews cannot be used and a Type I crew is not available, so the District, will have to use their own people.

1900 - Trail crews are notified to move to Gates Park.

2010 - A public meeting is conducted in Choteau with about 30 people in attendance. Most of the concern deals with what the fire is doing and what it is going to do.

2015 - Approximately twelve District people are dispatched to Gates Park, another twelve are scheduled to go into Gates Park on 7/22.

2041 - The fire is still very active.

At approximately 2100 Bonney, Smith, Gorman, Kamrud, Love, and Sonny Stiger, author of the Bob Marshall Wilderness Fire Plan, meet to discuss the Gates Park Fire. They determine the Incident Plan needs to be updated in terms of action planning (containment strategy - safety and public notification plans). Gorman tells the District they should attempt to suppress spots that occur east of Gates Creek but not at the risk of endangering our crews. He stresses the need for safety and keeping the public current on the fire status. To accomplish the latter, an "Up Front" newsletter will be placed in local communities to keep people informed on Wilderness fire activities.

They also decide that Byron Bonney will continue to serve as FBA. Sonny Stiger will be employed to assist in any way possible since he developed the Wilderness Fire Plan, is a qualified FBA, and is familiar with the area. Arrangements are made for getting equipment, supplies, and crews into the fire on 7/22.

BENCHMARK RAWS 7/21/88

TIME	READING
1646-1746	MAX. TEMP. 86°
1546	MIN. R/H 12%
1546-1646	MIN. 1 HR 3%
0546-0646	MAX. R/H 86%

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
1400	5-10 MPH SW	CLEAR	

GLEASON FIRE WEATHER STATION

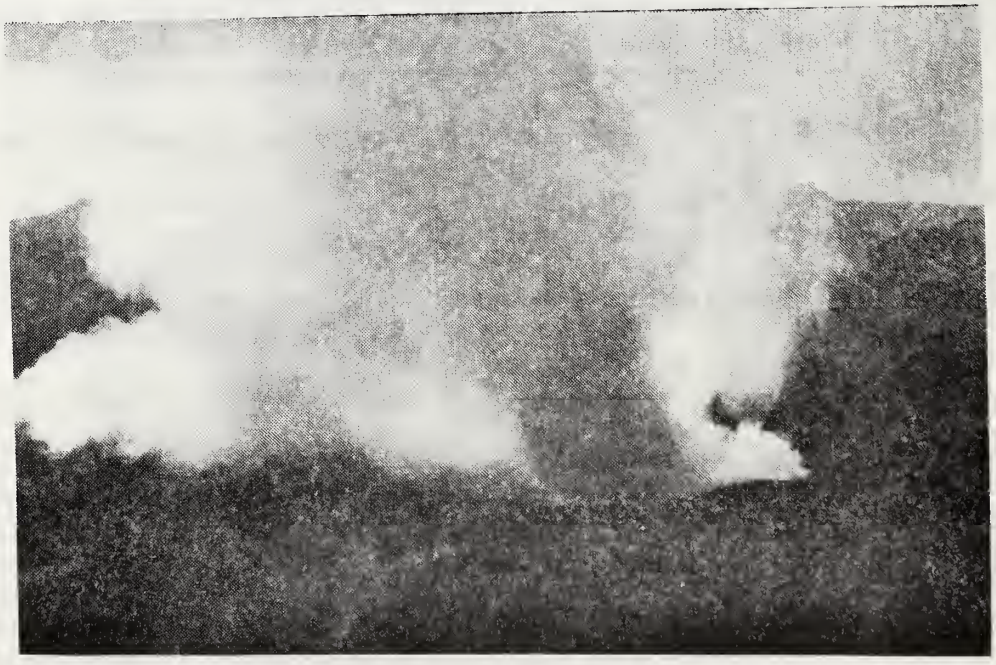
ERC is at 47 (10-year average is 29)
Thousand hour fuel moisture is 14%

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
1035	74°	31%	6%	5-8 MPH GUSTS 15 MPH - W	CLEAR
1608	88°	18%	3%	5-8 MPH - W	

Fire size is 731 acres.

7/21/88 - The Canyon Creek Prescribed Fire 32 miles away becomes very active. W. Jaeger, Jr. Photo



7/21/88 - The fire jumps Gates Creek. W. Jaeger, Jr. Photo

7/22/88 Friday

The Gates Park Fire made a significant increase in size the previous day. Major spotting occurred east of Gates Creek and on Gates Ridge triggering the action called for in the Incident Plan. Twenty-four people during the night and early morning start lining the spot fires east of Gates Creek under the direction of Brad McBratney, Holding Crew Foreman. If the spots can not be held, the fire will be reassessed and control lines and projections expanded. Bonney, Kamrud, and Stiger are at Gates Park. Smoke is heavy in Choteau and Fairfield and east from 1900 to 2100.

The fire spots into areas made up primarily of young lodgepole but the spots are not active and many go out. In areas of heavier fuels the fire is very active. By about 1000 another spot fire to the northeast of Gates Creek is smoking up and a crew is sent to contain it.

SPOT FORECAST FOR..GATES PARK 1010 AM MDT FRIDAY JULY 22, 1988

1. DISCUSSION: HOT AND DRY AIRMASS TO CONTINUE OVER AREA. VERY WEAK FRONTAL SYSTEM CROSSING LATE TODAY TO PRODUCE SOME WIND BUT NO MOISTURE.

2. FOR THE FIRST BURN PERIOD...TODAY
   A. WEATHER...DRY
   B. CWR...ZERO LAL: 1
   C. TEMPERATURE..AFTERNOON HIGH FROM 86 HIGHER ELEVATIONS TO 95 BOTTOMS
   D. HUMIDITY...MIN 15 TO 20 PCT
   E. WIND..EYE LEVEL...LIGHT DOWNSLOPE AND DOWNCANYON. AFTERNOON WINDS PICKING UP FROM SW TO NW 5 TO 15...LIKELY SOME GUSTS TO NEAR 25 MPH LATE AFTERNOON INTO EVENING HOURS.

3. FOR THE SECOND BURN PERIOD...TONIGHT
   A. WEATHER...DRY
   B. CWR...ZERO LAL: 1
   C. TEMPERATURE...MINIMUM 50 TO 55.
   D. HUMIDITY...FROM 65 PCT BOTTOMS TO 45 PCT UPPER SLOPES AND RIDGES.
   E. WIND..EYE LEVEL...SW TO NW 3 TO 8...GUSTS TO 15.

4. OUTLOOK FOR FOLLOWING BURN PERIOD...SATURDAY STILL QUITE DRY AND MOSTLY SUNNY. FEW DEGREES COOLER AFTERNOON AND HUMIDITY LITTLE CHANGE. WEST WINDS 15 TO 20 AT TIMES AFTERNOON.

Bonney scouts the south and west side of the fire on foot and Stiger scouts the east and north side of the fire on foot and horseback. A contingency plan will be prepared based on this recon.

During mid-afternoon the fire makes another major run to the east, crosses Gates Creek north of Gates Park, and reaches the ridge top east of Gates Park by about 1715 hours. It is noted by Stiger that fire is burning actively in lodgepole fuels considered somewhere between Fuel Model G (10) and Fuel Model H (8). In the late afternoon the fire becomes more active backing down into the Red Shale Creek drainage west of Gates Park. Bonney gives spot weather from ridge west of Gates Park at 1510: Temp. 81°, R/H 14%, Winds upslope 3 to 4 Gusts to 6 MPH.

At 1510 Patrol Mountain Lookout reports a smoke in Straight Creek in the Scapegoat Wilderness. At 1610 Straight Creek Fire is 30 acres and building fast. About 1930, Kamrud and Bonney leave Gates Park by helicopter and fly to Straight Creek to assess the fire. Bonney is

assigned as FBA to the Straight Creek Fire and Stiger will take over as FBA for the Gates Park Prescribed Fire.

Plans are made to keep the Gates Park Fire west of the North Fork of the Sun River. Specific plans for 7/23/88 are to construct a line from Gates Creek on the south flank, east to the top of Gates Park Ridge to prevent the fire from moving south into Gates Park. The crew is to hold up when they reach the ridge until the eastern and northern fire edge is scouted and a spot weather forecast is received. If weather conditions and fire behavior allows, the line will be constructed north easterly, surrounding all spot fires and tying into Trail No. 164. Next, line will be built to the north tying in with the fires edge on the ridge north of Trail No. 164. If this fails, an attempt will be made to burnout from the river and hold any spot fires east of the river using Trail No. 109 as an anchor.

The Incident Plan is updated by personnel in the Choteau Office. It will be used until updated information can be obtained from the fire. Projections are based on Bonney's 30 day projection prepared on 7/13/88.

The forest "Up Front" new letter is distributed to local establishments and government offices in the communities of Choteau, Fairfield, Dutton, Collins, Brady, Conrad, Pendroy, Bynum, and Augusta.

BENCHMARK RAWS 7/22/88

TIME	READING
1646-1746 1246,1746-1946 1246-1946 0646	MAX. TEMP. 84° MIN. R/H 19% MIN. 1 HR 4% MAX. R/H 67%

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COV-ER*	*REMARKS*
1405	6-9 MPH W	CLEAR	

GLEASON FIRE WEATHER STATION

ERC 47 (10-year average 30) Thousand hour fuel moisture 14%

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
0900	64	46%	10%	CALM	CLEAR
1310	80	17%	2%	6-G10 - W	CLEAR SKY-GATES
1515	79	24%	3%	CALM - VAR.	N. FK. SUN & TRAIL 164 CLEAR
1700	80	22%	4%	C TO 6 - W	ON TRAIL 109 S. OF 164: CLEAR

The size is about 1314 acres.

7/22/88 - 1215. W. Jaeger, Jr. Photo

7/22/88

WILDERNESS FIRE MANAGEMENT
INCIDENT PLAN

Fire Management Area Sun River Pass Unit RM 10 Bob Marshall Date July 22, 1988
National Forest Lewis & Clark Ranger District Rocky Mtn

A. General Information
1. Map showing projected perimeters.
2. Burned Area expected under serious conditions.
   a. Total Acres 5,100
   b. Miles of Perimeter 11.4
3. Burned area expected under present foreseeable conditions.
   a. Total Acres 1,800
   b. Miles of Perimeter 6.8
4. Location
   a. Legal SW ¼ NW ¼ Section 25 T. 24N R. 11W
   b. General 2 miles northwest Gates Park Cabin
   c. Prominent Landmarks Between Red Shale Creek & Gates Creek
5. Present Size 750 (estimate)
6. Fuel Type spruce/alpine fir Fuel Model G
&. Habitat Type 730 Cover Type spruce/fir Land Type VC

B. Other Information
1. Monitoring Requirements Beartop Lookout, Gates Park Guard Station & serial patrol flights, daily spot weather forecasts
2. Possible Smoke Problems - Project for Life of Fire North Fork Sun westerly winds pushing smoke into Choteau & Fairfield
3. Fire Weather/Fire Behavior Forecasts Continued hot & dry with crowning, torching runs and spotting up to 1/4 mile from main body of fire.
4. Projected Prognosis of Weather and Fire Season Continue to be hot & dry.
5. Fire Administration Cost Estimate Present allocation $12,500 - projected costs - $20,000.

C. Decision Criteria
1. Prescription Concerns Continuous fuels over large area, 1000 hr fuels lower than normal, time of year with hot temperatures and dry weather persisting.
2. Fire Load
   a. Forest Two fires going - Rocky Mtn RD & Musselshell RD
   b. Region Preparedness Level 4 (high) Several project fires going.
3. Area Boundaries or Private Property No private lands affected, Flathead NF located to the west.

4. Public Safety Trail closures in effect on trail #s 110 & 161. Will monitor the need to close additional trails. Trailheads & trails have been posts.
5. Smoke Effects
   a. On Site ridgetop to midslope
   b. Sensitive Areas North Fork of Sun River Drainage, Gates Park, residents close to Front (Teton drainages).
6. Soil and Water
   a. On Site None
   b. Off Site Gates Creek - along fire's eastern edge
7. Political/Social Atmosphere
   a. Local Public Support - some concern expressed about smoke
   b. Regional or National support

D. Action Alternatives
1. Possible Control Lines North Fork Sun River
2. Access
   a. Roads None
   b. Helispots Gates Park Airstrip
3. Present and Projected Crew Needs Present - 20 person crew to suppress & manage spot fires crossing Gates Creek. Projected 40 person crew (Category I) to contain eastern boundary. Retardant drop as necessary (see attachment).
4. Cost Alternatives $20,000

E. I&I
1. Contacts
   a. Media News releases & updates to media, television & radio stations, Tribune, Acantha, & Sun Valley Sun (provide video & interviews), public meeting - Choteau, Information Brochure handed out & posted in Choteau, Fairfield & Augusta.
   b. Residents-Users, etc. Telephone calls to local residents & outfitters, resorts, etc. affected by smoke.
2. Specific Issues Smoke, containment

7/23/88 Saturday

Crews start building line as planned

An informational board is set up at the District. Terry Marceron, Program Analysis, makes contacts with local people throughout the weekend.

THE 0940 SPOT WEATHER FORECAST FOR GATES PARK:

1. DISCUSSION: A WEAK WEATHER SYSTEM PASSED THROUGH EARLY THIS MORNING AND WILL CAUSE COOLER CONDITIONS TODAY. LITTLE MOISTURE IS AVAILABLE, SO NO CONVECTION TODAY. HIGH PRESSURE TO RETURN BEGINNING TOMORROW, FOR CONTINUED DRY AND WARM

2. FOR TODAY...
   A. WEATHER...SUNNY. A FEW HIGH CLOUDS THIS MORNING.
   B. CWR...ZERO
   C. TEMPERATURE..AFTERNOON MAX 78-82
   D. HUMIDITY...AFTERNOON MIN 15-18%
   E. WIND..EYE LEVEL...NORTHWEST 4-8 MPH

3. FOR TONIGHT...
   A. WEATHER...CLEAR
   B. CWR...ZERO
   C. TEMPERATURE...MIN 39-42
   D. HUMIDITY...RECOVERY POOR...MAX NEAR 55%
   E. WIND..EYE LEVEL...BECOMING MAINLY DOWNSLOPE 1-3 MPH

4. OUTLOOK FOR SUNDAY...
   SUNNY AND ABOUT 5 DEGREES WARMER. RH ABOUT THE SAME OF A LITTLE DRIER.
   WINDS WESTERLY 3-8 MPH.

The National Weather Service reports that, since the weather forecast was made an easterly pressure gradient has developed. This could result in stronger easterly wind in the afternoon on both the Straight Creek and Gates Park Fires.

As of 1300 the line is completed to the ridge top and a 3 acre spotfire is lined. Beartop Lookout is briefed to observe fire behavior closely with constant coordination with McBratney. McBratney and Stiger will discuss the safety of starting the downhill line. No construction will be attempted if not *SAFE*. The following criteria will be considered.

1. The line probably will be constructed in the morning of 7/24 when there is no wind and cooler conditions.

2. It might be advantageous to construct the line on the afternoon of 7/23 using the predicted east wind to protect the crew.

3. Either way, this line should be constructed before the strong west winds commence again as forecast for Sunday 7/31.

After completion of this line, the easterly advance of the fire will be monitored with three things in mind:

1. If advance is slow, the newly constructed line could be burned out. The general feeling is that there is too much unburned fuel in this area to burn out as the line is built. However, McBratney will make that determination as the line is constructed.

2. If the fire makes a fast run at the North Fork of the Sun River, fall back to the river, burn out if possible from river, and attack all spots east of the river with complete control using Trail No. 109 as the east anchor. A portable pump will be deployed, with hose lay, pre-positioned to assist. Consideration should be given to having a second pump in as well.

3. If Trail No. 109 is lost, the east boundary of the Wilderness will be used as the contingency line with consideration given to Headquarters Trail as the south boundary and Ray Creek as the north boundary. At this time the Forest Team should reevaluate this fire from a Prescription Fire vs. a Wildfire standpoint.

The remainder of the fire edge will be allowed to burn freely. The fire on the west edge is backing down into Red Shale Creek. This fire front will be monitored daily. (If there is a threat that the fire could cross Red Shale Creek to the south, the Forest Team should evaluate and determine the need for holding action in this area in addition to controlling spotfires crossing Red Shale Creek. Burning out from Trail No. 130 should be considered with an anchor to the Gates Park landing strip. Here again portable pumps could be used in Red Shale Creek.-- Discussion with Kamrud on 7/24 indicates that this is no longer a considered necessary to hold the fire north of Red Shale Creek.

The District will commit the crews presently on fire thru Sunday. They will reevaluate needs after the burning period on Sunday.

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
0930	54	57	9%	CALM	---TRAIL 110 N. OF TRAIL 164-CLEAR
1400	77	30	5%	4-G15 S.SE	SC. CLDS W/SOME HIGH CIR-RUS

At about 1445 the winds became calm at Gates Park. Beartop Lookout also reports calm with smoke on east side of fire drifting slightly to west.

SPOT FORECAST FOR..GATES PARK 4 PM MDT SAT JUL 23 1988

1. DISCUSSION: LIGHT EAST WINDS SHOULD DECREASE TONIGHT. HIGH PRESSURE OVER THE FIRE AREA SURFACE AND ALOFT FOR FAIR DRY WEATHER WITH LIGHT WINDS SUNDAY AND MONDAY.

2. FOR TONIGHT.
   A. WEATHER...PARTLY CLOUDY TO CLEAR...HIGH THIN CLOUDS.
   B. CWR...ZERO

C. TEMPERATURE..LOW 42 DEGREES
D. HUMIDITY...RECOVERY TO 55 TO 65 PERCENT
E. WIND..EYE LEVEL...EASTERLY 4 TO 12 MPH SLOWLY DECREASING.

3. FOR SUNDAY...
A. WEATHER...CLEAR
B. CWR...ZERO
C. TEMPERATURE...MAX 84
D. HUMIDITY...LOWEST 14%
E. WIND..EYE LEVEL...LIGHT AND VARIABLE 4 TO 8 MPH.

4. OUTLOOK FOR MONDAY...
SUNNY AND 3 DEGREES WARMER AND HUMIDITY LOWEST 12% HUMIDITY RECOVERY NIGHT ONLY TO 50%. WINDS VARIABLE 5 TO 10 MPH.

At 1640 it is decided not to build line downhill from Gates Park Ridge today. Many of the District crew have been working at peak performance since early morning. They will return to Gates Park, maintain saws and be ready to continue line building in the morning. Fire spread has slowed down, but areas in Red Shale and east of Gates Creek continue to be active.

Smith informs all Bob Marshall Wilderness Complex administrators and Tomascak that the Lewis and Clark will suppress all new starts in the Wilderness (except for fires that can be isolated) and asks the rest of the complex to do likewise. Lolo and Helena agreed, but the Flathead wants to keep their options open. Tomascak states that the RO will control new fires by the availability of prescribed fire funds.

The Incident Plan is updated from information submitted by Stiger from the fire. Projections are based on successfully holding the fire west of the North Fork of the Sun River.

BENCHMARK RAWS 7/23/88

TIME	READING
1746	MAX. TEMP. 81°
1646	MIN. R/H 22%
1446-1846	MIN. 1 HR 4%
0646	MAX. R/H 84%

BEARTOP LOOKOUT WEATHER

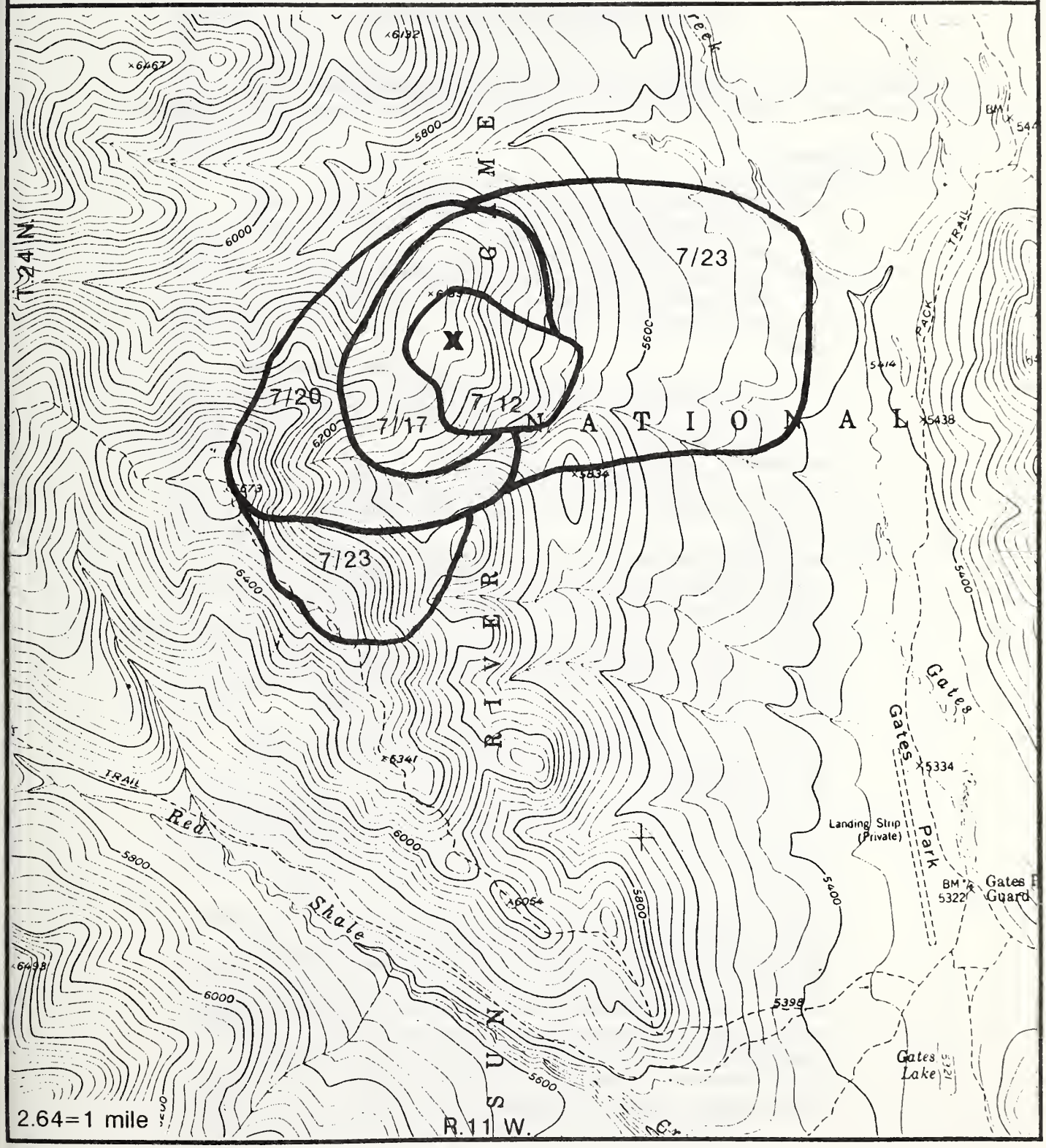
TIME	*WIND*	*CLOUD COVER*	*REMARKS*
1515	2-7 MPH SW	.2	

GLEASON FIRE WEATHER STATION

ERC is at 48 (10-year average 29)
Thousand hour fuel moisture 14%

The fire now totals 1554 acres.

MAP 8 — 7/23/88 Fire Perimeter



7/23/88

WILDERNESS FIRE MANAGEMENT
INCIDENT PLAN

Fire Management Area Sun River Pass Unit RM 10 Bob Marshall Date 7/23/88
National Forest Lewis & Clark Ranger District Rocky Mtn

A. General Information
1. Map showing projected perimeters.
2. Burned Area expected under serious conditions.
   a. Total Acres 10,000 acres +
   b. Miles of Perimeter 16+ miles
3. Burned area expected under present foreseeable conditions.
   a. Total Acres 6,000 acres
   b. Miles of Perimeter 14+ miles
4. Location
   19,20 & 30 T24N, R10W
   a. Legal 1 ¼ 1 ¼ Section 23-26 T. 24N R. 11W
   b. General 3/4 mi. No. of Gates Park GS
   c. Prominent Landmarks Gates Park
5. Present Size As of 7/22 +/- 1,600 acres
6. Fuel Type Fire Group 7&9 Fuel Model VC
&. Habitat Type 730 Cover Type spruce/fir Land Type VC

B. Other Information
1. Monitoring Requirements Situation III, Air observation daily and on-site monitoring due to severe fire weather forecast. Beartop LO will provide observation and documentation of fire activity.
2. Possible Smoke Problems - Project for Life of Fire With the extended hot & dry weather forecast, this fire will make more major runs developing a smoke column which will occassionally drift to populated areas E. of the Rocky Mtn. Front. In addition, inversions in valleys near the fire will cause heavy smoke to lay in at night until 0900. At other times, smoke will hamper fire detection in areas surrounding the No. Fk. drainage.
3. Fire Weather/Fire Behavior Forecasts See separate weather forecast. With SW winds, there will be major runs to the N. Fk. of Sun. Slope areas will spot toward river and run back up slope, otherwise, there will be less intense runs upslope to the west The fire will continue to back downslope into Red Shale drainage, with the possibility of a run to the E. with strong SW. or W. winds. See projection map and 7/23 plans. See also Fire Behavior & Fuels narrative 7/25.
4. Projected Prognosis of Weather and Fire Season Hot and dry through most of August with potential to remain critical into Sep. Occassional disturbances wll bring increased SW winds at times
5. Fire Administration Cost Estimate
   Present allocation $12,500 - projected costs - $25,000.

C. Decision Criteria
1. Prescription Concerns This fire is within prescription, however, the administrative decision to keep the fire W of the N. Fk. Sun & protecting Gates Park requires some holding action on the S. & E. flanks. Continuous fuels over large area, 1000 hr are lower than normal, time of year with hot temps & dry weather persisting.
2. Fire Load
   a. Forest Two major fires, one more on RMRD & one on Musselshell RD
   b. Region Preparedness Level 4 (high) Several project fires going.
3. Area Boundaries or Private Property No area boundaries are threatened nor is private property: See Fire Behavior Report 7/25.
4. Public Safety Trail closures in effect on trail #s 110 & 161. 130 & 164. Visitors are contacted & warned. Trailheads & trails have been posted.
5. Smoke Effects
   a. On Site See item B-2.
   b. Sensitive Areas North Fork of Sun River Drainage, Gates Park, residents close to Front (Teton drainages).
6. Soil and Water
   a. On Site None
   b. Off Site Gates Creek - along fire's eastern edge & No. Fk. Sun Rv & Gates Lake
7. Political/Social Atmosphere
   a. Local Public general support but some concern expressed about watershed & smoke.
   b. Regional or National general support

D. Action Alternatives
1. Possible Control Lines North Fork Sun River - holding at trail 109. Use portable pumps to help pickup spots.
2. Access
   a. Roads None
   b. Helispots Should be no problem around fire.
3. Present and Projected Crew Needs Present - 20 person crew to hold fire W of No. Fk. Sun with one portable pump. Projected 40 person crew (Category I) to contain east boundary with one more portable pump, helicopter and bucket.
4. Cost Alternatives $50,000

E. I&I
1. Contacts
   a. Media News releases & updates to media, television & radio stations, Tribune, Acantha, & Sun Valley Sun (provide video & interviews), public meeting - Choteau, Information Brochure handed out & posted in Choteau, Fairfield, Augusta, Dutton, Collins, Brady, Conrad, Pendroy, and Bynum.
   b. Residents-Users, etc. Telephone calls to local residents & outfitters, resorts, etc. affected by smoke.
2. Specific Issues Smoke, containment, watershed. Forest PIO has started daily "Fact Sheet" for wide distribution.

7/24/88 Sunday

Twenty District people continue building line from the top of Gates Ridge northeastward tying into bogs and Trail No. 164.

SPOT FORECAST FOR..GATES PARK FIRE NOON MDT SUNDAY JULY 24, 1988

1. DISCUSSION: HIGH PRESSURE OVER THE AREA THIS WEEKEND AND MONDAY FOR VERY WARM AND DRY CONDITIONS. HUMIDITY RECOVERY AT NIGHT IS POOR AT THESE HIGHER ELEVATIONS. WINDS CONTINUED LIGHT.

2. FOR THE FIRST BURN PERIOD...
   A. WEATHER...SUNNY WITH REW HIGH THIN CLOUDS
   B. CWR...ZERO
   C. TEMPERATURE..HIGHEST 81
   D. HUMIDITY...LOWEST 16%
   E. WIND..EYE LEVEL...LIGHT NORTHWEST 3 TO 8 MPH

3. FOR THE SECOND BURN PERIOD...TONIGHT
   A. WEATHER...CLEAR
   B. CWR...ZERO
   C. TEMPERATURE...LOWEST 50
   D. HUMIDITY...RECOVERY TO ONLY 50%
   E. WIND..EYE LEVEL...NORTHWEST 5 TO 10 MPH

4. OUTLOOK FOR FOLLOWING BURN PERIOD...MONDAY LITTLE CHANGE.

The southwest corner, near Red Shale Creek, is active early and going strong and steady from about 0900 on. The fire in the center of the north perimeter peaks is activity early (0900-1000) and then diminishes during the afternoon. The area northwest of Gates Ridge increases slowly in activity through the afternoon. The fire along the ridge northeast of Gates Ridge increases more rapidly in activity and then begins to die down, along with other active spots, after 1800.

Smith flies the fire and discusses the holding actions with Love in Choteau.

BENCHMARK RAWS 7/24/88

TIME	READING
1746	MAX. TEMP. 83°
1446	MIN. R/H 18%
1446-1846	MIN. 1 HR 4%
0546	MAX. R/H 93%

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
1400	3-7 MPH W	CLEAR	

GLEASON FIRE WEATHER STATION

ERC is at 50 (10-year average 28)
Thousand hour fuel moisture 14%

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
0945	68	35%	7%	2 G-8 MPH N-NW	GATES: SOME HIGH CIRRUS
1115	71	31%	6%	CALM	TRAIL #110 N EDGE FIRE Calm at eye level, however winds at tree top level NW. Some torching and considerable surface fire in mature trees.
1330	75	29%	4%	CALM	NEAR WRONG CR. G-5. A FEW MID-LEVEL CLOUDS
1510	78	26%	4%	4-7 MPH VARIABLE	LONE PARK Considerable activity (torching) on north flank of fire.
1730	78	28%	5%	3-G7 MPH SW	GATES PARK

Though active in many areas today, the fire did not increase significantly in size. It is now 1674 acres in size.

7/25/88 Monday

The Gates Park Prescribed Fire continues to expand slowly to the northwest as was projected. With the high temperatures and low relative humidity the fire can be expected to move in the late afternoons. Due to required rest or other pressing work, the number of people in Gates Park is reduced to 8 including an FBA. Immediate replacements could not be made. Plans are made to fly the fire later in the day.

Smoke which obscures the entire valley begins to clear at about 1120. The entire fire is inactive.

Stiger prepares a Fire Behavior/Fuels Report to accompany the Incident Plan updated on 7/23/88. (See appendix for fire behavior computations.)

The crews continue building line from Trail No. 164 north to the Ridge. They are instructed to burn out as they go.

SPOT FORECAST FOR...GATES PARK FIRE NOON MDT MONDAY JULY 25, 1988

1. DISCUSSION: HIGH PRESSURE OVER THE AREA TODAY AND TUESDAY FOR VERY WARM AND DRY CONDITIONS. HUMIDITY RECOVERY AT NIGHT IS POOR AT THESE HIGHER ELEVATIONS. PACIFIC WEATHER FRONT. MOVING IN FROM THE WEST BRINGING GUSTY WINDS WEDNESDAY.

2. FOR THE FIRST BURN PERIOD...
   A. WEATHER...SUNNY
   B. CWR...ZERO
   C. TEMPERATURE..HIGHEST 85
   D. HUMIDITY...LOWEST 16%
   E. WIND..EYE LEVEL...LIGHT MOSTLY SLOPE WINDS 2 TO 8 MPH

3. FOR THE SECOND BURN PERIOD...TONIGHT
   A. WEATHER...CLEAR TO SOME HIGH CLOUDS
   B. CWR...ZERO
   C. TEMPERATURE...LOWEST 54
   D. HUMIDITY...RECOVERY TO ONLY 50%
   E. WIND..EYE LEVEL...LIGHT SLOPES WINDS 2 TO 5 MPH

4. OUTLOOK FOR FOLLOWING BURN PERIOD...SUNNY WITH INCREASING HIGH CLOUDS AND VERY WARM AND DRY TUESDAY...SOUTHWINDS INCREASING TUESDAY NIGHT...WIND SHIFT TO GUSTY NORTHWEST WINDS WEDNESDAY AND AFTERNOON NORTHWEST WINDS THURSDAY...SLIGHTLY COOLER THURSDAY.

1220: Activity increases rapidly from a small wispy smoke to a grey mushroom cloud with flames near the ridge north of Trail No. 164.

The fire may have spotted across the line on to the east side of Gates Park Ridge. Beartop Lookout reports a major flare-up there at 1300. A scout will walk back up line from Trail No. 164 and see if it can be lined. If so, crew will be sent to do it. Otherwise, they will wait until better conditions prevail.

The fire is becoming increasingly active. The line is completed to the ridge north of Trail No.164, but the burnout can not be completed due to intense fire. The crew falls back to watch for spots at about 1500 hours. The fire crosses the fireline in several places. Fire behavior projections indicate fire should not cross Trail No. 164 until about 1800. The crew retreats to Trail No. 164 with plans to burn out and hold from the trail.

1530: Ashes are falling in Gates Park from the Red Shale blow-up.

1630: The fire makes a major run east on a front along Trail No. 110 north of Gates Park. It appears to be going all the way to ridge top north of Trail No.164. again. All major hot spots are extremely active.

1730: Intensive activity in Red Shale tops the ridge, just west of Gates Park with visible flame and a roar.

1800: The fire in Red Shale makes another major run east up the ridge to Trail No. 161. The fire front is about 1 1/2 mile west of Gates Park moving down hill with the wind.

BENCHMARK RAWS 7/25/88

TIME	READING
1446-1546 1646 1446-1846 0646	MAX. TEMP. 89° MIN. R/H 11% MIN. 1 HR 3% MAX. R/H 89%

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COV-ER*	*REMARKS*
1410	0-2 MPH W	.3	

GLEASON FIRE WEATHER STATION

ERC is at 49 (10-year average 27) Thousand hour fuels drop to 13%

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
1030	67	49	8%	CALM	GATES PARK SOME HI CIRRUS heavy smoke laying in park
1215	78	23	3%	5-G12 - SW	HI CLOUDS smoke lifted at about 1130
1330	79	21	3%	0-2 - NW	GATES PARK
1530	79	19	2%	5-10 - W-SW	GATES PARK considerable fire activity
1630	77	22	4%	0-2 - VAR.	GATES PARK Gates Park under influence of smoke column from Red Shale
1730	78	23	5%	CALM - VAR.	GATES PARK intensive activity in Red Shale and along Trail 110
1900	77	25	7%	0-2 - VAR.	GATES PARK fire activity subsiding

The fire size is 2097 acres

7/25/88 - Fire in Red Shale Creek. B. Lindler Photo

FIRE BEHAVIOR/FUELS REPORT

7/25/88

Generally the fire is burning in heavy fuels. Primarily old growth Lodgepole Pine with considerable amounts of advanced fir understory and much downfall. Typical, eastside "G" model (or 10). Estimate heaviest in the 80 to 100 T/acre range. In the wetter bottoms, the fuels are mature, all age stands of spruce and Fir with possibly heavier fuel loading up to +/- 150 T/acre maximum.

The fire has generally moved west, upslope with light winds or light westerly winds, however on Thur. 7/21 and Fri. 7/22 a strong SW flow preceding a weak weather system, pushed the fire east, downslope, with considerable spotting, toward the No. Fk. of Sun River.

These easterly runs crowned, creating massive convection columns with smoke drift into the Choteau and Fairfield areas, however, the ridge west of the No. Fk. Sun River (Gates Park Ridge) acted as a barrier to eastward spread. The fire did spot over Gates Park Ridge to the east toward the river, and south toward Gates Park G.S. On 7/22 - 7/25, a scratch line was constructed from Gates Creek on the south, over Gates Park Ridge and northeasterly to the fire edge on the next ridge north, encompassing all spot fires. This was done to prevent the fire from hooking south with the NW flow on Sat., 7/23 and Sun., 7/24, and threatening Gates Park G.S. This improvement is to be protected as well as the Pack Bridge across the Sun River according to the Fire Plan for the area. As of 7/25 the fire had not spotted across the ridge north of Gates Park Ridge, but has made crowning runs to the ridge top and stopped.

The fuels between these ridges and the river are generally lighter, but are still classed as fuel model "G" or 10. They are a transition between H and G, but have moderate to considerable amounts of advanced Fir understory beneath Lodgepole Pine. Fire advance downhill to the river, with west winds should be slower with less crowning than on Thur. and Fri. 7/21 and 7/22, otherwise the spots will burn back uphill to the west.

Fuels east of the river, along Trail 109 from Headquarters Creek to Lone Park are heavy "G" model fuels with much downfall. There could be considerable spotting here. However, the scratch line should prevent additional major runs to the east in this area.

Fuels from about Lone Park north to Wrong Creek are much lighter. They are still a transition between a "G" and an "H" model but there is much less Fir understory and downfall. Estimate less than 50 T/acre. Spot fires here should be easier to pick up.

The fire will probably move northeasterly with strong SW flows, which seem to proceed weather systems, and may make a run toward the river through a saddle in the vicinity of Route Creek. If it does, there is still enough old downfall to catch spotfires east of the river, however, spot fires here should be easily handled with a 20 person crew. Particularly with a portable pump in the river.

Fuels to the north, along Trail 110 and northwest toward Lick Creek are heavy old growth LP Pine with much advanced Fir understory and downfall. The bottoms are as described for mature Spruce/Fir. There are some islands of young Lodgepole that will retard spread. To the west, toward the Divide, these fuels gradually decrease in quantity to an "H" model and at the Divide fuels are sparse to non-existent. However, to the north and northwest, the heavy, old growth fuels continue across Lick Creek on to the Divide and over into the Flathead NF. This is approximately 9 mi. distant. If "normal" fall weather develops in late August or early September with typical wet weather, this fire will probably not cross Lick Creek to the north. However, as of 7/21/88 the ERCs for Gleason, Benchmark, Lincoln and Spotted Bear weather stations, were considerably above the average and approaching or already surpassing the 90th percentile.

We have not experienced this kind of weather, this early in the season, since the Prescription Fire Plan was in operation. The forecast is for continuing hot and dry, therefore, we may experience unusually extreme fire behavior before fall rains occur. (The AFFIRMS data compared to critical levels and 10 year average is in the Prescription Fire Records).

Fuels in the head of the Red Shale drainage are quite similar to the heavy fuels described elsewhere. At the present, the fire is backing into the Red Shale drainage and may cross this drainage in the upper reaches, and continue to spread westward upslope until it runs out of fuel.

With strong SW flows, the fire in Red Shale could move east towards Gates Park. However, young Lodgepole immediately west of the air strip and south should slow and stop the eastward spread in this area.

Otherwise, this fire will continue to burn upslope in the Gates Creek drainage as originally projected by Byron Bonney in the initial analysis.

I updated the incident Plan and Map showing projections on 7/24/88. Daily projections are included in the Prescription Fire records.

EVERETT M. STIGER
Fire Behavior Analyst

7/25/88 - 1145 The fire is two weeks old.

7/26/88 Tuesday

Report from Great Falls: Fire was flown about 2000 last night. It has moved toward the North Fork of the Sun, but has not crossed it. It has backed down about half-way into Red Shale Creek. It has moved northeast across Gates Creek and was burning against younger aged lodgepole pine. If the fire continues to burn the way it has, the projected size is 10,000 acres plus. The fire exhibits its greatest activity between 1600 and 2000. A front will pass through the area on Wednesday, 7/27 bringing high winds and mostly dry lightning.

SPOT FORECAST FOR..GATES FIRE NOON TUESDAY JULY 26, 1988

1. DISCUSSION: HIGH PRESSURE OVER THE AREA TODAY FOR VERY HOT DRY CONDITIONS THIS AFTERNOON. HIGH PRESSURE WILL MOVE EAST TONIGHT AND THE TRAILING END OF A PACIFIC WEATHER FRONT WILL MOVE IN FROM THE WEST TOMORROW EVENING. AREA IS UNDER RED FLAG WATCH TOMORROW FOR THREAT OF DRY LIGHTNING ALONG THE FRONT.

2. FOR TODAY AND TONIGHT
   A. WEATHER...MOSTLY CLEAR.
   B. CWR...LESS THAN 10%
   C. TEMPERATURE/ D. RELATIVE HUMIDITY

   5900 FT

	TEMP	RH
2PM	80	32%
6PM	88	25%
MID	75	37%
6AM	58	65%

   E. WIND..EYE LEVEL...UPCANYON/UPSLOPE 4-8 MPH, VARIABLE NEAR RIDGETOPS. WINDS TONIGHT MOSTLY DOWNSLOPE 3-6 MPH BY 10PM

3. FOR WEDNESDAY...
   A. WEATHER...PARTLY CLOUDY, 30% CHANCE OF AFTERNOON AND EVENING THUNDERSTORMS
   B. CWR...10%
   C. TEMPERATURE...HIGH TEMP 85-90
   D. HUMIDITY...MIN RH 20-25%
   E. WIND..EYE LEVEL...VARIABLE 5 TO 10 MPH GUSTY WITH FRONTAL PASSAGE OR NEAR ANY BUILDUPS.

4. OUTLOOK FOR THURSDAY...PARTLY CLOUDY, COOLER WITH GUSTY AFTERNOON WINDS OUT OF THE WEST. HIGH TEMP 75-80 TOP OF FIRE. MIN RH'S MOSTLY IN THE 20S.

The fire remains quiet until 1400. Crowning occurs near Trail No. 164 at 1520, but the hottest part of fire is backing down into Red Shale. It is estimated to be within 1/8 mile from the Red Shale Trail. At 1610 the fire in Red Shale makes another major run at the ridge just west of Gates Park.

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
0920	56	53	10%	CALM	GATES PARK: HEAVY SMOKE IN VALLEY
1100	69	48	8%	CALM	4 MI. MARK AT TRAIL 130 (ELE. ABOUT 6200' HEAVY SMOKE
1230	72	37	5%	5-G12 - NE	HEAD OF RED SHALE, TRAIL 175 NOTE: Came out of smoke at 6400'! Wind measurement taken on exposed ridge. Fire is starting to torch on west edge above Red Shale Creek. No column, just smoke pall over fire.
1500	74	29	4%	CALM	ON HIGH PT. NEAR WALL TRAIL 175

The crew attempts to hold the fire west of Trail No. 164 and west of their constructed fire line to the south. They have one pump in the river and spend most of the day picking up spots across their lines and cooling down the fire edge as it approaches their line. McBratney feels it is not safe nor feasible to burn out. They have their hands full. At 2230, McBratney reports to Beartop Lookout that some spots have jumped the trail and they can not knock them down. There is a lot of smoke and torching trees. They will have to try to pick up the spots early in the morning. McBratney leaves the fire for scheduled days off leaving Brodie Gallahon in charge.

BENCHMARK RAWS 7/26/88

TIME	READING
1746	MAX. TEMP. 90°
1546-1646,1946	MIN. R/H 14%
1446-1846	MIN. 1 HR 3%
0646	MAX. R/H 75%

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COV-ER*	*REMARKS*
1435	3-7 MPH W-NW	CLEAR	

GLEASON FIRE WEATHER STATION

ERC is at 55 (10-year average 29)
Thousand hour fuel moisture 13%

The size is now at 3072 acres.

Cooling down hot spots. K. Westly Photo

FIRE BEHAVIOR REPORT
Notes for 7/26

(Review this with crew.)

1. Weather will generate explosive conditions in heavy fuels. Light winds will allow maximum convection columns with such hi temps. and lo humidities. Long range spotting can be expected.

2. Compute spotting distance and plot probable direction.

3. Runs will be upslope with Sun.

4. 1st run will be in Gates Creek.

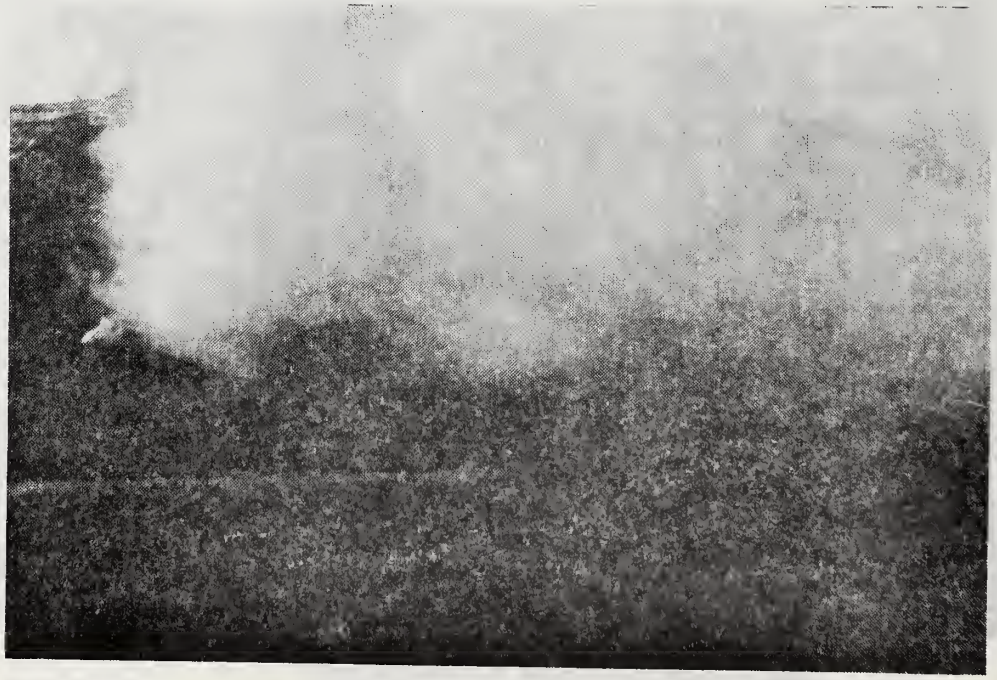
5. 2nd will be along Gates Park Ridge and No. Ridge from spots.

6. 3rd will be in Red Shale.*

7. Figure spread for above.

8. Determine ERC averages.

* Possibility that Red Shale drainage could go tomorrow if reaches bottom tonight. 7/25 check this in a.m. Take closure sign. Take 1 person along for safety.



7/26/88 - 1410 Fire in Red Shale Creek, west of Gates Park. W. Jaeger, Jr. Photo

7/27/88 Wednesday

Forest Supervisor Gorman, Fire Staff Smith, and Rocky Mountain District Ranger Casey brief the Regional Forester's staff and the Regional Incident Command Organization (RICO) on the Gates Park Prescribed Fire.

Supervisor Gorman requests Stiger to coordinate public information and ecological information for both the Canyon Creek and Gates Park Prescribed Fires. He is to meet with Gorman in Augusta on Thursday, 7/28/88. Stiger will make projections for Gates Park Fire before coming out.

SPOT FORECAST FOR..GATES PARK 11:40 AM MDT WEDNESDAY JULY 27, 1988

1. DISCUSSION: RED FLAG WARNING.. VERY WEAK WEATHER FRONT MOVING EASTWARD THROUGH THE FIRE AREA LATE THIS AFTERNOON AND EARLY THIS EVENING. RISK ISOLATED DRY LIGHTNING WITH ERRATIC WINDS. SKIES CLEARING LATER TONIGHT

2. THIS EVENING AND TONIGHT
   A. WEATHER...ISOLATED THUNDERSTORM IN THE AREA. CLEARING LATER TONIGHT
   B. CWR...BELOW 10%
   C. TEMPERATURE..LOW TONIGHT 48
   D. HUMIDITY...HUMIDITY RECOVERY 65%
   E. WIND..EYE LEVEL...ERRATIC EVENING 5 TO 15 MPH AND COULD BE GUSTY IF ANY THUNDERSTORM FORMS NEARBY WINDS WEST 5 TO 15 MPH LATE TONIGHT

3. THURSDAY.....
   A. WEATHER... SUNNY TO PARTLY CLOUDY
   B. CWR... BELOW 10%
   C. TEMPERATURE...80
   D. HUMIDITY... 18%
   E. WIND..EYE LEVEL...WESTERLY 10 TO 20 MPH

4. OUTLOOK FOR FRIDAY INTO THE WEEKEND...SUNNY AND WARM AND DRY. TEMPERATURES SLOWLY WARMING SUNDAY AND MONDAY BACK TO UPPER 80'S. LIGHTER WINDS FRIDAY 5 TO 15 AFTERNOON VARIABLE IN DIRECTION.

Smoke fills valley until about 1200. Overall, the fire is relatively inactive. The most active area is along the west edge of fire with a minor amount in Gates Creek. No new spots develop on the east edge, however, Beartop Lookout observes smokes further down on the river side of ridge north of Trail No. 164 than he observed yesterday. The 8 person crew continues working on spot fires using a Mark III pump in the river.

1200: Stiger reports rapidly falling relative humidity and warns the crew to keep their heads up.

1400: The humidity takes another large drop.

1530: Stiger reports a tenuous situation is developing at the river and asks for a patrol plane to scout the fire and check for spots across river. West winds have increased significantly over fire.

1530: Beartop Lookout reports that the fire near Trail No. 164 "gets explosive". The fire in this area makes a run at the crew trying to hold the fire along Trail No. 164 where it cuts northeastward to the river. This is the point where the handline comes in from the south.

1540: Crew Foreman Gollahon reports a solid wall of flame makes a run down to the river bank. They are all safe and do not think it crossed Trail No. 164 yet.

1607: Gollahon reports two spots have crossed the river, but they have put them out with the pump.

1608: Beartop Lookout calls Gollahon, "Get out of there you have fire behind you."

1610: Gollahon reports all are out and accounted for.

1620: Crew is together and walking south on Trail No. 109 to a vantage point. Gollahon reports they had to leave a pump and chain saw on gravel bar in the river. They may lose hose, as they could not get it all out in time.

1630: Beartop Lookout reports the fire has crossed the North Fork of the Sun River as a major crown fire.

1730: The patrol plane reports the fire crowning up Ray Creek with 100 to 125 foot flames. It is progressing up Ray Creek about 1/4 to 1/2 mile.

1900: The fire in Ray Creek slows to a standstill then picks up again with renewed vigor about 2045. The rest of the fire perimeter is quiet, however the fire in Ray Creek burns intensely with flames two to three times tree height visible from Beartop Lookout until about 2340. By midnight the fire has progressed up to BM 6557 near the head of Spruce Creek, more than 1 1/2 miles east of the North fork of the Sun River.

BENCHMARK RAWS 7/27/88

TIME	READING
1646	MAX. TEMP. 85°
1646	MIN. R/H 17%
1346 - 1746	MIN. 1 HR. 4%
0746	MAX. R/H 70%

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
1420	20 MPH W-SW GUSTS TO 25 MPH	.4	

GLEASON FIRE WEATHER STATION

ERC 54 (10 - YEAR AVERAGE 29) THOUSAND HOUR FUELS 13%

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
0815	50°	82%	15%	CALM	AT WRONG CREEK: OVER-CAST
1000	59°	69%	13%	CALM	AT 11 MI. MARKER TRAIL 108 .8 CLOUDS
1200	75°	31%	5%	0 - 2 - VAR	TRAIL 164 AT FIRE EDGE: .4 CLOUDS
1400	79°	24%	3%	0 - 4 - ?	AT GATES PARK: <.1 CLOUDS
1525	78°	26%	4%	GUSTS TO 16 WNW	GATES PARK: FIRE MAKING RUNS TO EAST
1800	80°	27%	7%		GUSTS TO 12 WNW GATES PARK: <.4 CLOUD COVER.

Size is about 3636 acres.

7/27/88 - 2300 Climbing higher on the ridge South of Ray Creek. W. Jaeger, Jr. Photo

7/28/88 Thursday

Beartop Lookout reports the fire burned all night in Ray Creek and was again crowning by 0820. The fire continues up Ray Creek crowning on a broad front and burning intensely all day. It continues to back down into Spruce Creek and crosses the ridge into the Headquarters Creek drainage.

The second edition of "Up Front" is distributed to the public in Fairfield, Choteau, Augusta, Fort Shaw, Sun River, and Vaughn. Terri Marceron, who distributes the newsletter, talks to people about air quality and assesses their concerns. The only concern is breathing difficulties for the elderly and those with breathing-related illness.

Gorman, Smith, Fitzpatrick, Casey, Kamrud, and Love meet in Choteau to discuss contingency plans for the Gates Park and Canyon Creek Prescribed Fires. Gorman states the primary objectives are to: 1. Protect life, 2. Prevent the fire from escaping the Wilderness boundary, and 3. Protect existing structures and facilities in the Wilderness.

SPOT FORECAST FOR..GATES PARK 12:10 PM MDT THURSDAY JULY 28, 1988

1. DISCUSSION: WESTERLY FLOW ALOFT FOR FAIR SKIES TODAY, FRIDAY AND INTO THE WEEKEND. WESTERLY WINDS ALOFT A LITTLE STRONGER TODAY SPILLING DOWN EAST SLOPES OF THE ROCKIES, DECREASING TONIGHT.

2. FOR THE LATE THIS AFTERNOON AND TONIGHT
   A. WEATHER...SUNNY WITH SOME HIGH CLOUDS
   B. CWR...ZERO
   C. TEMPERATURE.. HIGHEST 79 LOW TONIGHT 47
   D. HUMIDITY... LOWEST 22% RECOVERY TONIGHT TO 55%
   E. WIND..EYE LEVEL...WEST 10 TO 20 LATE AFTERNOON AND EARLY EVENING DECREASING TONIGHT TO 5 TO 10 MPH.

3. FOR THE FRIDAY
   A. WEATHER... SUNNY
   B. CWR... ZERO
   C. TEMPERATURE... HIGH 78
   D. HUMIDITY... LOWEST 21%
   E. WIND.. EYE LEVEL... LIGHT MORNING TO UPSLOPE 4 TO 10 MPH AFTERNOON

4. OUTLOOK FOR SATURDAY AND SUNDAY...WARM AND DRY WITH MOSTLY SLOPE WINDS. HUMIDITY RECOVERY AT NIGHT POOR TO ONLY 50%

Stiger (FBA) makes last projections before leaving Gates Park for new duties in Helena:

"The fire will cross Red Shale by 1300 and move up the northeast slope of Red Shale about 17 chains by dark. The fire will travel down Red Shale with strong west winds.

Not much westward movement in Gates Creek. The fire will burn back into itself with strong west winds. It may keep moving gradually north along the ridge above the North Fork of the Sun River towards the saddle directly west of Route Creek. The fire can be expected to make the next major push toward the River at this point several days in the future.

The fire in Red Shale may also make a run toward the River as it moves west and south and comes under the influence of strong west winds. This would push it towards the mouth of Headquarters Creek. I anticipate this would happen and depends upon conditions when it

reaches the bottom around Gates Lake. It may not be able to cross there except under extremely adverse conditions.

The fire in Ray Creek should back down into Spruce Creek at the same rate as projections for Red Shale Creek, i.e. 1.2 chains/hour, with occasional runs to the east under the influence of west winds.

The fire in Ray Creek should hook around into the head of Headquarters Creek but with west winds will bump into the bare ridge north of the Creek. The fire should continue to back down into Headquarters at the same rate. (At 1 chain/hour this would take about 48 to 96 hours from now - noon 7/28 i.e. at noon on 7/30 to noon on 8/1.) This is a very general approximation and depends on fuels and weather over the next few days.

The fire probably will continue to work north and east with west - southwest winds towards Lone Park and the head of Frazier Creek.

The fire in Gates Creek will continue to work west and north with normal upslope winds during the day. This will take several weeks to reach Lick Creek *probably*.

The *unusually* dry fuels could make rapid, "fire storm" runs possible.

THEREFORE MY RECOMMENDATIONS ARE:

1. Pull out of Gates Park.
2. Close Headquarters and Route Creek Passes at Wilderness boundary.
3. Close the Lick Creek Trail.
4. Close the Biggs Creek Trail at the Wilderness boundary.
5. Close the Nesbit Creek Trail at the Wilderness boundary.
6. Close Trail 175 at the junction with Trail 132.
7. Close Trail 111 at Spotted Bear Pass.
8. Close Trail 110 near Two Shacks Flat.
9. Close Trail 166 to Gates Park.

The other option is to put an all out effort into controlling the fire in Ray Creek and keep the fire from crossing the River. This would be a *major* fire suppression effort and I believe would do more damage to the area than the fire, but it may still be the prudent thing to do based on public pressure and Regional and National concerns."

/s/ E. M. Stiger, Fire Behavior Analyst

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
0840	51°	65%	11%	CALM-	AT GATES PARK: .4 CLOUDS
1020	70°	35%	6%	2-5 - WEST	AT GATES PARK:.3 CLOUDS

1550: Beartop reports seeing flames above Our Lake. A spot fire is confirmed and suppression action is started immediately. (Our Lake fire is controlled at 90 acres on August 1, 1988 - This fire is officially called Hidden Lake.) It was apparently started by a firebrand from Ray Creek.

Red Shale also develops a large column about 1555 and Beartop reports Red Shale becoming extremely active about 1730.

2230 The crew at Gates Park is told to be ready to leave the next day.

The Impact Analysis Team meets with Stiger in Augusta and discusses strategies for the Gates Park Fire. They agree to use the helicopter to remove all people from Gates Park, to fireproof the Guard Station and pack bridge, and to aggressively attack any spot fires outside the Wilderness.

BENCHMARK RAWS 7/28/88

TIME	READING
1646	MAX. TEMP. 81°
1846 - 1946	MIN. R/H 18%
1646	MIN. 1 HR 3%
0146 - 0346	MAX. R/H 49%

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
1435	20 MPH WITH GUSTS 30MPH SW	.4	Thousand hour fuel moisture dropped to a critical level of 12% on either 7/28 or 7/29/88.

Fire size is now 6,379 acres. An accurate boundary could not be determined based on current information.

7/29/88 Friday

Most of the District crew is removed from Gates Parks. Five District people, led by McBratney, work to secure the Gates Park area by: 1) blanketing the cabins with fireproof tarps made from fire shelters, 2) installing a gravity-feed wet sock on the packbridge, and 3) removing personnel and stock from the area. When the wet sock does not work, they use a Mark III pump and sprinkler system.

SPOT FORECAST FOR..GATES PARK NOON MDT FRIDAY JULY 29, 1988

1. DISCUSSION: WESTERLY FLOW ALOFT FOR FAIR SKIES TODAY AND SATURDAY. WINDS ALOFT ARE NOT AS STRONG AS THE PAST FEW DAYS SO JUST MODERATE AFTERNOON AND EVENING WINDS TODAY AND SATURDAY, POOR RECOVERY AT NIGHT.

2. FOR THE LATE THIS AFTERNOON AND TONIGHT
   A. WEATHER...SUNNY WITH SOME HIGH CLOUDS
   B. CWR...ZERO
   C. TEMPERATURE.. HIGHEST 79 LOW TONIGHT 47
   D. HUMIDITY... LOWEST 21% RECOVERY TONIGHT TO 50%
   E. WIND..EYE LEVEL..SOUTHWEST 5 TO 15 AFTERNOON AND EARLY EVENING DECREASING TONIGHT TO DOWNSLOPE 5 TO 15 MPH.

3. FOR THE SATURDAY
   A. WEATHER... SUNNY
   B. CWR... ZERO
   C. TEMPERATURE... HIGH 82
   D. HUMIDITY... LOWEST 18%
   E. WIND.. EYE LEVEL..LIGHT MORNING TO UPSLOPE 4 TO 10 MPH AFTERNOON

4. OUTLOOK FOR SUNDAY...WARM AND DRY WITH MOSTLY SLOPE WINDS. HUMIDITY RECOVERY AT NIGHT POOR TO ONLY 50%

The northwest perimeter is the most active area during the afternoon with activity above Red Shale Creek increasing in the late afternoon. Along Red Shale, the fire is moving gradually southeast, downslope, toward the mouth of Hoxsey Creek. The fire burns less intensely in the Ray Creek drainage and keeps creeping down toward Headquarters Creek from the ridgetop to the north. Smith, Kamrud, and Teton County Sheriff Pete Howard fly the fire.
The Straight Creek Fire is controlled at 2000 at 466 acres.

BENCHMARK RAWS 7/29/88

TIME	READING
1746	MAX. TEMP. 84°
1546-1746	MIN. R/H 16%
1446-1746	MIN. 1 HR. 3%
0646	MAX. R/H 74%

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COV-ER*	*REMARKS*
1400	5-7 MPH SW	CLEAR	

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
0945 1350	63° 74°	52% 36%		calm 5-8 - W/SW	CLEAR CLEAR

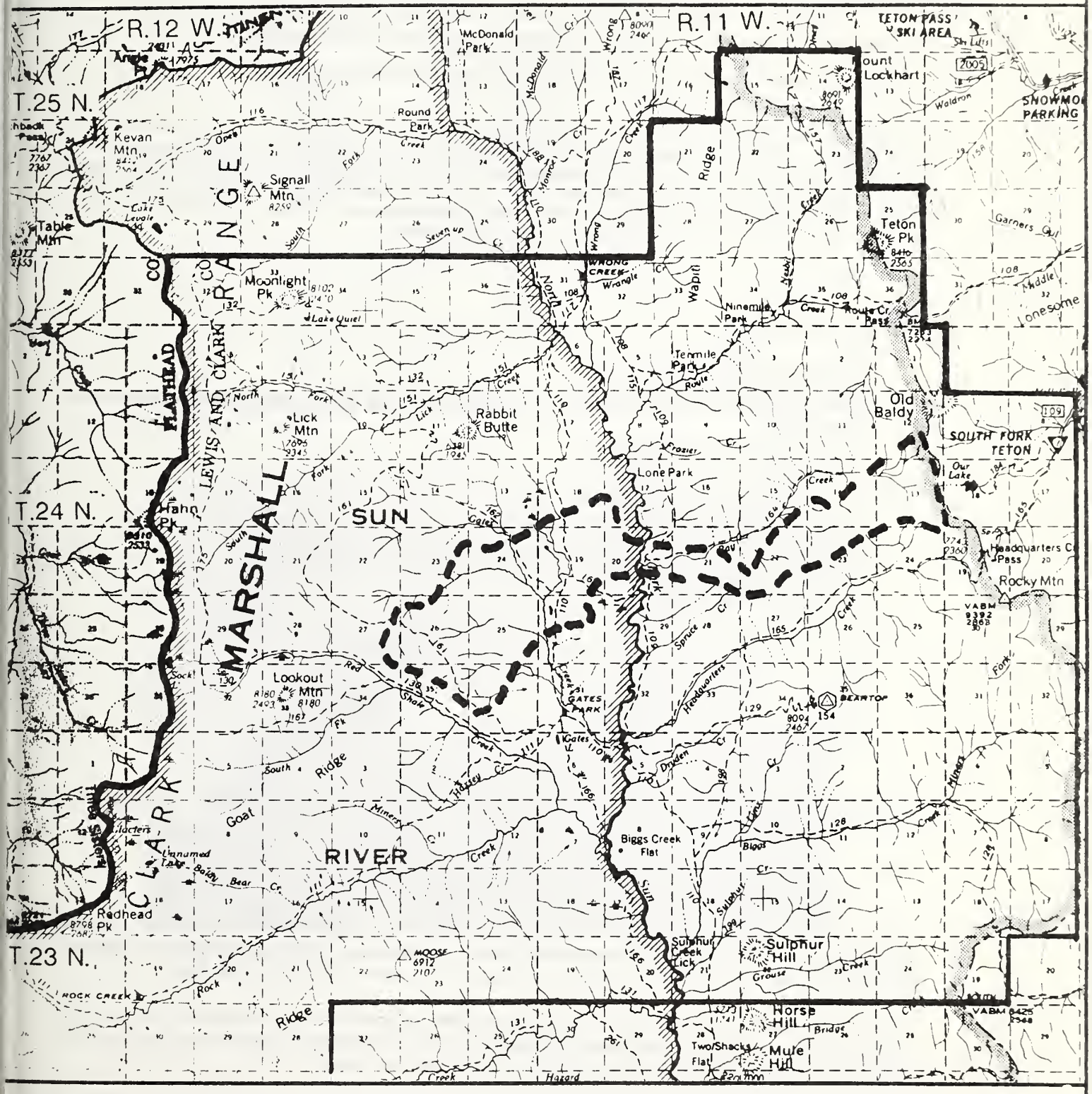
The ERC from the Gleason Fire Weather Station continues to rise. On this date the ERC reaches 57, 26 percentage points above the 10-year average of 31. The thousand hour fuels reach the critical level at 12 %. The ERC and thousand hour fuels are shown for the duration of the fire in Appendix B.

Fire size is 7,266 acres. An accurate boundary could again not be determined based on current information. The fire actually increased by about 3200 acres in the Ray Creek drainage on 7/28 and 7/29, and about 400 acres above Red Shale.

The following message is transmitted by Kamrud over the District radio:

> Fire Season 1988 arrived early and with a vengeance. Fire danger across the entire area is EXTREME. Major large wildfires have burned in the area since early June. All fuels, dead and living, are critically dry and fires are starting easily and spreading fast. North slopes are burning as fast as and hotter than south slope because they have more fuels and they are equally dry. Winds are causing torching of trees, spotting and crowing and serious fire control problems. Fires can go from relatively quiet to extreme fire behavior in a matter of minutes with only minor changes in conditions. Topography and wind, of course, have a strong affect on the direction of fire spread, but fires are "following" the extremely dry fuels downhill and into the wind. Poor relative humidity and temperature recovery at night at higher elevations has resulted in fires burning very hot at night in places where typically firefighters get a break.
>
> All fire personnel need to be heads-up and alert at all time. The most basic tenets of effective fire fighting, the 10 Standards Orders, are based on years of experience. Review them, understand them and LIVE by them.
>
> Firefighting is emergency work but an emergency situation doesn't mean we will risk human life. IF IT CAN'T BE DONE SAFELY, DON'T DO IT! You are equipped with the best technology that wildland firefighters have ever had. You have had appropriate fire suppression training and you are qualified to do the job. The last ingredient for success is the human element--and that's you. Be alert, rely on your training and experience, follow the basics and keep your thumbs-up attitude.
>
> /s/ James F. Mann
> Director of Aviation and Fire Management

MAP 9 7/29/88 Gates Park Fire



7/30/88 Saturday

The crew finishes covering the roofs of buildings at Gates Park with fire shelters.

MISSOULA FIRE WEATHER OFFICE MORNING FORECAST 9 AM MDT SATURDAY JULY 30, 1988

DISCUSSION...
FLAT-DRY HIGH PRESSURE STILL EXPECTED TO HOLD OVER AREA TODAY AND SUNDAY. AIR MASS WARM, DRY AND STABLE. EXPECT SOME CHANGE IN WEATHER PATTERN FOR NEXT WEEK. A TROUGH OF LOW PRESSURE IS EXPECTED TO DEEPEN ALONG THE WEST COAST AS HIGH PRESSURE BUILDS NORTH IN THE PACIFIC. THIS WILL TURN OUR WIND FLOW PATTERN TO NORTHWEST AND BRING COOLER AIRFLOW INTO THE REGION ALONG WITH WIND. STILL NO SIGN OF MUCH MOISTURE BUT QUESTION HERE IS HOW FAR SOUTH THE UPPER LOW PRESSURE DIGS ALONG THE COAST AND HOW LONG IT PERSISTS. STAY TUNED FOR FURTHER DEVELOPMENTS.

ZONES: ALL ZONES

TODAY...
WEATHER: SUNNY
LAL: 1 CWR: ZERO
MAXIMUM TEMPERATURES: 85 TO 95
MINIMUM HUMIDITIES: 15 TO 25%
SURFACE WINDS: MOSTLY SLOPE TYPE 4-8, WS TO NW 5 TO 15 AND GUSTY HIGHER RIDGES AND THROUGH OPEN AREAS.
FREE AIR WIND: SW TO WEST 10 TO 15.

TONIGHT...
WEATHER: MOSTLY CLEAR
LAL: 1 CWR: ZERO
MINIMUM TEMPERATURES: 40S AND 50S
MAXIMUM HUMIDITIES: 65 TO 85 PCT BOTTOMS...40 TO 60 PCT SLOPES AND RIDGES.
SURFACE WINDS: MOSTLY LIGHT AND VARIABLE...
FREE AIR WINDS: SW TO W 15

TOMORROW... SUNDAY
WEATHER: CLEAR TO PARTLY CLOUDY.
LAL: 1 CWR: ZERO
MAXIMUM TEMPERATURES: 85 TO 95
MINIMUM HUMIDITIES: 15 TO 25 PCT
SURFACE WINDS: SW TO NW 5 TO 15 MPH...LITTLE GUSTY IN NORTHERN ZONES.
FREE AIR WINDS: WEST 15

3-5 DAY OUTLOOK...MONDAY THROUGH WEDNESDAY
A COOLING TREND AND MORE WIND. CHANCE OF A FEW SHOWERS/THUNDERSHOWERS DEVELOPING. HIGHS COOLING INTO THE 80S MONDAY AND INTO THE 70S AND LOWER 80S MIDWEEK.

6-10 DAY OUTLOOK...THURSDAY AUG 4 THROUGH MONDAY AUGUST 8...
TEMP: NEAR NORMAL PRECIPITATION: NEAR NORMAL

1350: Beartop Lookout reports the southwest edge of the fire, along Red Shale Creek, has become very active with flames visable through a thick cloud of smoke. By 1520, the fire makes a run south of Gates Park Guard Station toward the packbridge on the North Fork of the Sun River.

1830: Smith flies the fire and reports the fire has reached the North Fork of the Sun River about a 1/2 mile south of the packbridge. Smith lands at Choteau to discuss the fire with Kamrud and Bonney. They feel that Headquarters Creek drainage will burn in the next few days.

2135: Kamrud schedules a helicopter to remove Jaeger from Beartop Lookout the first thing the next morning because the fire's position and activity level pose a threat to the lookout.

BENCHMARK RAWS 7/30/88

TIME	READING
1546 1646 1546-1646 0546-0646	MAX. TEMP. 86° MIN. R/H 15% MIN. 1 HR 3% MAX. R/H 84%

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COV-ER*	*REMARKS*
1400	10-15 MPH W	CLEAR	

The fire was estimated at 8200 acres based on IR flight. Actual size was 8,364 acres.

7/28/88 - 1200 Fire climbing northwest slope of bald knob above Spruce Creek. W. Jaeger, Jr. Photo

7/31/88 Sunday

An IR flight is conducted in the early morning hours. The results are reflected in the fire size for 7/30/88. McBratney, Forrest, and three District people complete the sprinkler system on the packbridge across the North Fork of the Sun River, a mile from the Gates Park Guard Station. The fire had ended its run the previous night only a couple hundred yards from the bridge. At 1100 Beartop Lookout is removed by helicopter.

MISSOULA FIRE WEATHER ZONES: 104...105...106...108

TODAY...
WEATHER: FEW HIGH CLOUDS FORMING.
LAL: 1 CWR: ZERO
MAXIMUM TEMPERATURES: 85 TO 95
MINIMUM HUMIDITIES: 10 TO 15 PCT
SURFACE WINDS: W TO NW 15 TO 25 AND GUSTY THIS AFTERNOON
FREE AIR WINDS: SW TO W 20

TONIGHT... "RED FLAG"
WEATHER: PARTLY CLOUDY. CHANCE OF ISOLATED DRY LIGHTNING
LAL: 6 CWR: 10 PCT
MINIMUM TEMPERATURES: MOSTLY 50S
MAXIMUM HUMIDITIES: 70 TO 90 PCT BOTTOMS....50 TO 60 PCT SLOPES/RIDGES
SURFACE WINDS: W TO NW 5 TO 15 MPH AND GUSTY EXPOSED AREAS....
FREE AIR WINDS: WEST 20

TOMORROW... MONDAY
WEATHER: PARTLY CLOUDY. CHANCE OF ISOLATED SHOWERS/THUNDERSHOWERS
LAL: 2-3 CWR: 10 TO 20 PCT
MAXIMUM TEMPERATURES: 70 TO 85
MINIMUM HUMIDITIES: 20 TO 35 PCT
SURFACE WINDS: W TO N 5 TO 15 WITH 15 TO 25 AND GUSTY MORE EXPOSED AREAS.
FREE AIR WINDS: NW 20

3-5 DAY OUTLOOK... TUESDAY THROUGH THURSDAY
COOLER WITH A CHANCE OF A FEW SHOWERS/THUNDERSHOWERS. LIKELY WINDY MOST AFTERNOONS. HIGHS 75 TO 85. LOWS 45 TO 55

Continued warm, dry weather and strong westerly winds created by an incoming front cause the fire to make significant advances to the east from late afternoon into the night. At 1815, Ray Mills, Wilderness Ranger, reports that the areas east and south of Gates Park are totally in flames.

The fire makes a five mile run up Headquarters Creek, starting just east of the packbridge. The fire burns hot in the Headquarters Creek drainage, but stops, as expected, when it reaches the rocks 1/2 to 1 mile below Headquarters Pass. The burning is so intense throughout the night that crews fighting the Hidden Lake Fire two miles further east report that at 0200 it is bright enough to read a book.

Slightly south of Headquarters Creek, the fire also moves up Dryden Creek toward Beartop Mountain, but slows as it enters a stand of younger lodgepole pine. The fire burns around three sides of Beartop Lookout Sunday night. At 2145, two District people leave the trailhead at the South Fork of the Teton for Headquarters Pass to look for spot fires over the Wilderness boundary. None can be found.

The fire had previously burned very hot in Ray Creek. It is speculated that reasons for the intense burning in the Ray Creek and Headquarters drainages are: 1) the drainages are straight and provide a direct east shot for the fire to follow; 2) the drainages are fairly narrow and steep, creating a chimney

effect for drafting the fire; and 3) the drainages had over mature timber. With the exception of these two drainages, the fire is creating a good mosaic vegetative pattern.

FIRE BEHAVIOR SERVICE CENTER

Low elevation RAWS readings for last night shows very little recovery in relative humidity. Upper RH values in the grasslands and grassland/conifer ecotone areas were in the 20-30% range. Most 1 hr and 10 hr fuel moistures peaked at values less than 10%. Return of these fuels to their daytime low values of 2 to 4% will occur by 1000 hrs and continue at these low levels until approximately 1800 when they will very gradually start to again rise.

Higher elevation sites in the mountains showed fair humidity recovery last night with most stations having recovery to 45 to 55%, some as far up as 80%. Fuel moisture recovery in these mountain 1 hr and 10 hr fuel was generally in the mid to upper teens in the western and central part of the Region. Fuel moisture values can be expected to begin their decline at approximately 0900 hrs and reach their low levels of 4-8% at 1400 to 1500 hrs. Moisture levels again will start to rise around 1700 to 1800 hrs.

Early afternoon fires are showing very rapid increases in fire behavior and rapid ROS in all fuel types, but especially the grassland fuel types which are very explosive. These fires are requiring very rapid, and all-out suppression efforts to establish control. Early detection is of the highest priority. Late afternoon fires are giving us a little more response time but are being pushed by strong low level afternoon winds.

ERC levels continue their steady climb over the entire Region. Remember the 1985 fire season, on July 27th the southern part of the Region started to received extensive precipitation with some stations receiving well over an inch. The entire Region was under a general wetting rain by August 1 which continued for the rest of that month. Don't expect that to happen this year. Seems to me Bob Mutch lost a six-pack to Mick DeZell (Bitterroot NF) who accurately predicted the start of the 1985 rains well in advance. Haven't heard Mick's end of the season prediction for this year.

Forecast (see the forecast included in this issue of the RICO situation report) for today is very similar to yesterday except there has been a decrease in airmass stability resulting in slight (20%) chance of afternoon thunderstorms over the region. The morning balloon soundings from Spokane indicates a higher possibility in the northern Idaho vicinity (40-60%). We can expect 10-20 mph winds to descend into the valley bottoms again this afternoon, and these winds may lessen the chance of T-storm buildup.

Most recent update on the Gates Park wilderness fire in the Bob Marshall indicates from last nights IR that approximately 7,200 acres have been burned. A small spot fire (Hidden Lake fire) immediately to the east (and beyond the wilderness boundary) which developed from the wind driven run on Thursday (7/28) is about 100 acres and being suppressed by the Lewis and Clark NF.

R1 fires to date this year (7/29) is 418 of which 271 were started by lightning and 147 were human caused. At this point very similar to last year; 418 total, 278 lightning, 140 man caused.

-- Chuck Bushey (329-4850, FTS 584)

BENCHMARK RAWS 7/31/88

TIME	READING
1546,1746 MAX. TEMP. 83° 1446-1546 1546 0646	 MIN. R/H 17% MIN. 1 HR. 3% MAX. R/H 87%

IR imagery shows that an additional 6600 acres burned on 7/31/88 bringing the fire size to 14,832 acres. An additional 7000 acres around Gates Park remains unburned, but surrounded by the fire.

7/31/88 - East of Gates Park west of River. B. Bonnie Photo

GATES PARK
CONTINGENCY PLAN
7/31/88

A. *Reporting Requirements*

Location: Gates Park

Acres: As of 7/30, +/- 8,000 acres.

Fuels: Old growth lodgepole pine w/advanced S/F understory and mature S/F bottoms.

Topography: Steep with drainages from west flowing into the North Fork of the Sun River.

Significant Fire Behavior: Crowning runs to east with strong SW flow. otherwise, upslope with occasional crowning.

Remarks: See Fire Behavior Report attached (Bonney, 7/30/88).
Also note Fire Behavior/Fuels Report from Stiger, 7/25/88.

B. *Contingency Requirements*

1. Map of fire perimeter with behavior and size indicated (map dated 7/28/88).

2. Chains of line to be built: Unknown at present, however, enough to control spotting along the east side of the Wilderness boundary.

3. Resistance to control: High.

4. Camps, water sources, helispots, acess areas: ID on map.

5. Required manpower to suppress: Suppression at the time will be limited to holding the fire west of the Wilderness boundary. This is a revised control line pursuant to decisions made at a strategy meeting on 7/28/88.

6. Constraints to suppression effort: Normal Wilderness constraints.

7. Facilities ahead of fire: Gates Park Guard Station, Wrong Creek Guard Station, pack bridge across North Fork of the Sun River, outfitter camps near Gates Park and Wrong Creek.

8. Facility Protection: *Gates Park Buildings* - A Mark III pump and hose lay and sprinkler system will be set-up around the facility using Gates Creek as a water source.

8/1/88 Monday

Smith and Kamrud fly the fire and confirm that the fire continues to burn very intensely in the Headquarters Creek drainage and from the packbridge back to Red Shale Creek. Two District people are taken out of Gates Park to Choteau for time off. Three people remain to monitor the fire.

MISSOULA FIRE WEATHER MORNING FORECAST 9 AM MDT MONDAY AUGUST 1, 1988

DISCUSSION...
MAJOR WEATHER CHANGE TAKING PLACE AS UPPER LEVEL LOW CONTINUES TO MOVE SLOWLY SOUTHEAST IN BRITISH COLUMBIA. AIR MASS OVER REGION IS ALREADY COOLING BUT STILL QUITE DRY AND STABLE. LOOKS LIKE MOISTURE WHICH IS STILL NORTH OF THE BORDER... WILL GRADUALLY SEEP INTO REGION FROM THE NORTH WEST WHEN THE LOW MOVES FURTHER EAST AND WIND FLOW TURNS TO NORTHWEST DURING THE NEXT 24 HOURS. HOWEVER...WETTING RAINS NOT TOO LIKELY....

ZONES: 101...104...108...NORTHERN HALF 105...

TODAY...
WEATHER: INCREASING CLOUDS AFTERNOON. CHANCE FEW SHOWERS/THUNDERSHOWERS DEVELOPING.
LAL: 2-3 CWR: 20 PCT
MAXIMUM TEMPERATURES: MOSTLY 70S
MINIMUM HUMIDITIES: 25 TO 35 PCT
SURFACE WINDS: ... BECOMING SW TO NW 15 TO 30 THIS AFTERNOON...WIND EAST DIVIDE NORTHWEST TO NORTH 15 TO 30 GUSTY.
FREE AIR WIND: WEST 20

TONIGHT...
WEATHER: MOSTLY CLOUDY SCATTERED SHOWERS/CHANCE ISOLATED THUNDERSHOWER
LAL: 3 CWR: 40 PCT
MINIMUM TEMPERATURES: 40S TO LOW 50S
MAXIMUM HUMIDITIES: 70 PCT AND HIGHER
SURFACE WINDS: SW TO NW 5 TO 15 WITH 15 TO 25 HIGHER EXPOSED AREAS.
FREE AIR WINDS: NORTHWEST 20 TO 25

TOMORROW... TUESDAY
WEATHER: PARTLY CLOUDY TO CLOUDY. SCATTERED SHOWERS.
LAL: 2 CWR: 40 PCT
MAXIMUM TEMPERATURES: 65 TO 75
MINIMUM HUMIDITIES: 30 TO 45 PCT
SURFACE WINDS: W TO NW 15 TO 25 AND GUSTY EXPOSED AREAS
FREE AIR WINDS: NORTHWEST 25

BENCHMARK RAWS 8/1/88

TIME	READING
1146	MAX. TEMP. 71°
1546	MIN. R/H 16%
1746-1946	MIN. 1 HR. 7%
0546-0646	MAX. R/H 72%

The fire size remains at 14,832 acres.

8/2/88 Tuesday

The fire burns around the packbridge southeast of the Gates Park Guard Station, but the pump and sprinkler system protect the packbridge from damage. The Gates Park Guard Station cabins remain blanketed with fireproof tarps.

MISSOULA FIRE WEATHER MORNING FORECAST 9 AM MDT TUESDAY AUGUST 2, 1988

DISCUSSION...
UPPER LEVEL LOW PRESSURE NOW COVERS THE REGION AND MOISTURE ASSOCIATED IS STILL REMAINING ACROSS THE NORTHERN ZONES INTO CANADA. THE AIRMASS IS SLIGHTLY UNSTABLE TODAY. THE UPPER LOW WILL SLOWLY MOVE EAST NEXT 36 HOURS. WIND FLOW PATTERN AT LOWER LEVELS IS SWINGING TO A MORE NORTHERLY DIRECTION TODAY WITH ENOUGH GRADIENT FOR BRISK WIND BUT MUCH LESS THAN PAST 24 HOURS. LOOKS LIKE LATE IN WEEK RIDGE REBUILDING AND SOUTHERN HEAT STARTING TO WORK NORTH AGAIN.

ZONES: 101...104...108

TODAY...
WEATHER: VARIABLE CLOUDINESS. FEW SHOWERS/THUNDERSHOWERS
LAL: 2-3 CWR: 10 TO 20 PCT
MAXIMUM TEMPERATURES: 65 TO 75
MINIMUM HUMIDITIES: 30 TO 40 PCT
SURFACE WINDS: NW TO NE 5 TO 15...GUSTY EXPOSED AREAS
FREE AIR WIND: NW 15

TONIGHT...
WEATHER: PARTLY CLOUDY...SLIGHT CHANCES SHOWERS/ISOLATED THUNDERSHOWER
LAL: 2 CWR: 10 PCT
MINIMUM TEMPERATURES: 35 TO 45
MAXIMUM HUMIDITIES: 80 PCT PLUS
SURFACE WINDS: MOSTLY SLOPE TYPE...NE TO E 5 TO 10 THRU PASSES AND OVER RIDGE
FREE AIR WIND: NW TO NE 15

TOMORROW... WEDNESDAY
WEATHER: PARTLY CLOUDY. SLIGHT CHANCE ISOLATED SHOWERS.
LAL: 1 CWR: ZERO TO 10 PCT
MAXIMUM TEMPERATURES: MOSTLY 70S
MINIMUM HUMIDITIES: 25 TO 35 PCT
SURFACE WINDS: NE TO SE 5 TO 10
FREE AIR WINDS: NORTHERLY 10

BENCHMARK RAWS 8/2/88

TIME	READING
1246	MAX. TEMP. 61°
1246	MIN. R/H 38%
1246	MIN. 1 HR. 7%
0346-0646	MAXS. R/H 100%

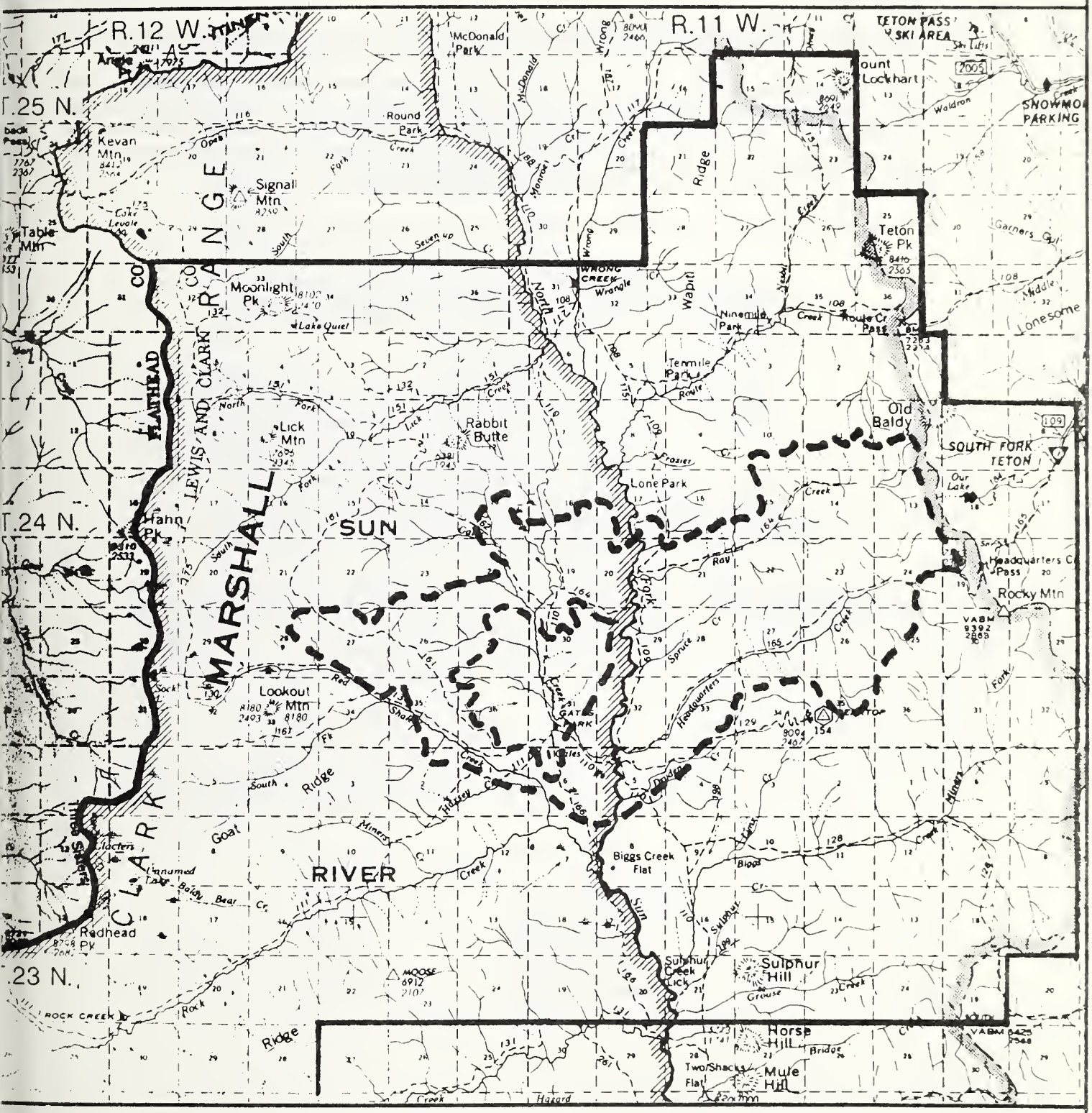
Cooler temperatures cause reduced fire activity with no major advances. Beartop Lookout is reactivated to help monitor the fire. Three district personnel remain at Gates Park to monitor the fire. Air restrictions go into effect prohibiting aircraft below ll,500 feet over the fire area.

Smith flies the fire and estimates that 50% of the area inside the fire perimeter has burned on the west side of the North Fork of the Sun River and 75% has burned on the east side of the river.

There is little change in the fire perimeter.

Packbriadge - North Fork Sun River pump and sprinkler system saved the bridge. K. Westly Photo

MAP 10 — 8/2/88 Gates Park Fire



8/3/88 Wednesday

Two District people are flown into Gates Park to replace the three who were flown out for time off.

Cooler temperatures, higher humidities, and some light morning rain cause a great reduction in fire activity. Beside reburning inside the perimeter, the most active areas are the west edge north of Red Shale Creek, and portions of the south edge, especially below Gates Lake. One spot fire outside the perimeter, west of Biggs Creek, is being monitored closely as it has the potential to make a run to the east, just as the fire near the packbridge did on July 29 and 30.

The Hidden Lake fire is controlled at 90 acres.

BENCHMARK RAWS 8/3/88

TIME	READING
1846	MAX. TEMP. 73°
1746, 1946	MIN. R/H 20%
1346, 1546, 1746-1946	MIN. 1 HR. 5%
0246-0746	MAXS. R/H 100%

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
1415	0-2 MPH NW	.2	.01 RAIN

There is little change in the fire perimeter.

8/4/88 Thursday

Jim Forrest, Wilderness Guard, remains at Gates Park to monitor the fire. Terry Caffee, another Wilderness Guard travels from Gates Park to Cabin Creek to inform the public and patrol the south boundary of the area closure.

SPOT FORECAST FOR..GATES PARK NOON MDT THURSDAY AUGUST 4, 1988

1. DISCUSSION: HIGH PRESSURE SURFACE AND ALOFT FOR WARMING AND DRY WEATHER TODAY AND FRIDAY. WIND FLOW ALOFT LIGHT TO MODERATE WESTERLY.

2. FOR THE LATE THIS AFTERNOON AND TONIGHT
   A. WEATHER...CLEAR
   B. CWR...ZERO
   C. TEMPERATURE.. WARMING TO 79 THIS AFTERNOON AND LOW TONIGHT 50
   D. HUMIDITY... LOWEST THIS AFTERNOON 20% RECOVERY TONIGHT TO 55%
   E. WIND..EYE LEVEL..WESTERLY 10 TO 15 AFTERNOON DECREASING TONIGHT TO LIGHT DOWNSLOPE 3 TO 15 MPH.

3. FRIDAY
   A. WEATHER... CLEAR
   B. CWR... ZERO
   C. TEMPERATURE... HIGH 81
   D. HUMIDITY... LOWEST 19%
   E. WIND.. EYE LEVEL..LIGHT SOUTHERLY 5 TO 8 MPH

4. OUTLOOK FOR FOLLOWING BURN PERIOD...WEEKEND...VERY WARM AND DRY WITH SOUTHWEST TO SOUTHERLY WINDS 5 TO 15 MPH. RISK OF THUNDERSTORMS SATURDAY EVENING AND SUNDAY.

1500: Beartop reports a sudden flare up on the fires perimeter 3/4 of a mile northwest of the lookout. The rest of the fire remains quiet until 1630 when the bottom of the Red Shale drainage, and a ridge along the west side of the North Fork of the Sun River, three miles north of Gates Park Guard Station begin to burn. This activity lasts until 1830. Kamrud and Bonney fly the fire looking at the natural barriers to the east. They will use this information in developing projections for a meeting on 8/5/88.

The 3rd edition of the "Up Front" newsletter is distributed to Fairfield, Choteau, Augusta, Fort Shaw, Sun River, and Bowmans Corner. Concerns expressed by the public include the need for information on the benefits of prescribed fire, effects on the ecosystem, air quality, and how large will the fire be allowed to grow. Greenfields irrigation District Manager, Jerry Nypen expresses grave concern that the fire will have a negative impact on Gibson Reservoir.

BENCHMARK RAWS 8/4/88

TIME	READING
1746	MAX. TEMP. 81°
1746, 1846	MIN. R/H 19%
1446-1846	MIN. 1 HR. 4%
0646	MAXS. R/H 89%

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
1040	73°	24%	5%	3-9 G15 W/NW	CLEAR

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
1030 1415	0-5 MPH SW 0-5 MPH W	CLEAR CLEAR	

The fire perimeter encompasses 15,107 acres.

Jim Forrest Wilderness Guard - Gates Park. K. Westly Photo

8/5/88 Friday

SPOT FORECAST FOR..GATES PARK 1020 AM MDT FRIDAY AUGUST 5, 1988

1. DISCUSSION:
   WARM AND STABLE AIRMASS OVER FIRE TODAY. SOME PICKUP IN SW TO W WIND FLOW NOTED. WEAK FRONTAL SYSTEM WILL CROSS AREA SATURDAY.

2. FOR THE FIRST BURN PERIOD...THIS AFTERNOON
   A. WEATHER...MOSTLY CLEAR...FEW LATE AFTERNOON CUMULUS
   B. CWR...ZERO
   C. TEMPERATURE.. MAX 88 BOTTOMS TO 77 TOPS
   D. HUMIDITY... MIN 15 TO 25 PCT.
   E. WIND..EYE LEVEL VARIABLE 3 TO 6 SW TO W 10 TO 20 WESTERLY EXPOSURES

3. FOR THE SECOND BURN PERIOD...TONIGHT
   A. WEATHER...SCATTERED CLOUDS...SLIGHT CHANCE OF THUNDERSHOWER IN AREA
   B. CWR... 10 PCT
   C. TEMPERATURE... MIN 40S
   D. HUMIDITY... FROM 70 TO 80 PCT BOTTOMS TO 30 TO 40 PCT SLOPES/RIDGES
   E. WIND.. EYE LEVEL..SE TO SW TO 8...SW TO W 10 TO 15 RIDGES

4. OUTLOOK FOR FOLLOWING BURN PERIOD....SATURDAY WARM AND DRY WITH S TO SW WINDS BECOMING SW AND LIKELY GUSTY AFTERNOON WITH FRONTAL PASSAGE. CHANCE OF FEW THUNDERSHOWERS IN AREA AND MORE CLOUDYNESS.

Brad McBratney and two District people are sent to the Wrong Creek Cabin to cover the roof with fire shelters as was done at Gates Park and to set up a pump and sprinkler system. Rich Lasko, FBA from the Spotted Bear District, and Bonney complete an update of the Fire Behavior Projections and add to the contingency plan.

The fire becomes active particularly on the north edge east of Gates Park Creek, and on the south edge around the packbridge. In the northeast, the fire expands toward the mouth of Route Creek. Southwesterly winds cause burning inside the perimeter.

1528: Beartop calls Forrest, who is at Wrong Creek patrolling the closed area, and reports the fire is making a run at the Gates Park Guard Station from the west. Forrest leaves immediately for Gates Park arriving at about 1645. He reports that the main cabin and the bunkhouse are safe, however the corral, tacshed, and outhouse are lost.

The Canyon Creek Impact Assessment Team meet in Lincoln. The Gates Park Fire is also reviewed.

Impact Analysis Team Meeting--Canyon Creek and Gates Park Fires--August 5, 1988

The Impact Analysis Team for both Canyon Creek and Gates Park prescribed fires met at Lincoln on this day. All members of both teams were present. The meeting was called to order by Canyon Creek Team Leader Dennis Johnson. It was decided that we would continue to meet jointly due to the dual roles of Bob Casey, Walt Tomascak and Sonny Stiger. We discussed the need for a list of formal objectives for the fires. Walt had prepared a list and discussed them with the group. It was agreed that the following objectives will be adopted:

1. We will keep the Canyon Creek fire within the prescription outlined in the Scapegoat-Danaher Fire Management Plan as amended.

2. We will keep the Gates Park fire within the prescription outlined in the Bob Marshall Fire Management Plan.

3. We will follow the intent of the Wilderness Act as much as possible, and limit the use of motorized equipment to only that necessary to keep the fire within prescription.

4. We will have no injuries on the fire.

5. Expenditures for keeping the fire within prescription will not exceed $15,000 per fire or $30,000 for both fires.

6. No loss of major investments will occur. This does not include those facilities planned for elimination at some future date.

7. We will develop videos of the fires that will serve as training aids for future management teams.

8. We will promote research of the fires to assist in the development of improved fire activity projections and contingency plans, water and soil impacts, successional stages of vegetation and impacts of smoke.

BENCHMARK RAWS 8/5/88

TIME	READING
1746	MAX. TEMP. 87°
1746	MIN. R/H 13%
1346-1446, 1746-18 46 MIN.	3%
1 HR.	
0546	MAXS. R/H 84%

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
0910	53°	72%	13%	CALM	CLEAR

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
1405	5-10 MPH NW	.2	

Fire size is 16,679 acres.

Gates Park Guard Station - covered with old fire shelters.

GATES PARK PRESCRIBED FIRE

Fire Behavior Projections
for
August 5, 1988

On 8/3/88 at 1530 hours the Gates Park fire was not very active. There were three spots that were actively burning around the total fire perimeter. These spots were located in the following places: 1) Red Shale Creek North of the forks of Red Shale on the South slope above the creek. 2) One spot is 3/4 mile West of the mouth of Route Creek West of the North fork of the Sun River. 3) The last spot is about 100 yards NE of the junction of Red Shale Cr. and Rock Cr.

There are other areas smoking along the perimeter and some spots smoking outside of the perimeter mainly in the Dryden Creek and West of Biggs Creek Flat. One spot in particular West of Biggs Creek could become more active in the next day or two and behave very similar to the spot that took off East of Gates Park on the 29th and 30th of July.

WEATHER FORECAST

The morning forecast for 8/5/88 is calling for the airmass to become a little warmer and drier today and some pickup in SW and West winds. SW winds aloft are still expected to bring a little southern moisture into region tonight and Saturday. The other weather feature of significance will cross from the Northwest. This weak front which should cross on Sat. on the longer range. Warm airmass still expected with S to SW wind flow.

Today: weather:sunny LAL: 1 CWR: 0 Max. Temps= 80-90 Min. RH = 10-25% Surf. Winds = SE to SW 5-10 changing to SW-NW 10-20 later today on Westerly exposures. Free Air Winds = SW-W 15-20

Tonight: Clear to Partly cloudy. Chance of isolated Thundershowers. LAL: 1-3 CWR: 0-10% Min. Temps = 40-50 Max. RH = 60-80% Bottoms 30-50% slopes and ridges. Surf. Winds SE-SW 3-8 SW-W 15-20 higher West Exposures Free Air Winds = 15-20 SW

Tomorrow: (8/6/88) Partly cloudy. Chance of few Thunderstorms. LAL: 2-3 CWR: 0-10% Mx. Temps = Cooling mostly 80's Min RH = 20-30% Surf. Winds: SW-NW 5-10 with 10-20 more Westerly exposures Free Air Winds SW 20

3-5 Day Outlook = Partly Cloudy and warm with Scattered showers/thnshrs. Highs in the 80's lows in the 40's to 50's. Not quite as dry with rh's up a little. Likely on the windy side Sunday.

General Fire Behavior

West Side: The fire will keep moving up canyon and upslope as it has been during the life of the fire. Don't expect any major activity on the West side of the fire unless East winds develop and this is *not* in the forecast.

Over the next week and a half period the fire will probably move to the lower slopes of Goat Ridge and Lookout Mountain. It will continue to move up Red Shale Creek also.

North Side: During periods where the South and Southeast winds are predicted for the area then this side of the fire will become more active. There are not any real active areas along the perimeter but as we have seen relatively inactive areas have come alive after periods of inactivity so the fire could move further towards Lick Creek during the next week. The fuels are fairly continuous and mainly older growth timber.

Alive Spot 3/4 mile West of Route Creek: This spot will remain active in the old growth. The old growth covers the area West of the North fork of the Sun. There are some younger stands of LP around the mouth of Route Creek and West and these could have some retarding effect. The timber stands are generally younger in Route Creek than in Ray and Headquarters Creeks. I believe that eventually Route Creek will probably have some major spread but feel that it will not be for 5-7 days. The chimney effect is about the same in Route Creek as in Ray and Headquarters Creek but there is a blocking ridge to the north and the fuels are not as extensive in the mouth of the main canyon as in the previous two drainages. The Nesbit Creek drainage has extensive heavy old growth fuels and could act as an escape point for the fire to the areas outside the wilderness. The head of Route Creek takes a major turn to the South and probably would not be directly involved with a major run and some spotting could occur outside the wilderness in the head of S. Fk. of Waldron Creek.

Dryden Creek: The fire is smoking along the perimeter in this area. Torching in the old growth will continue and some short runs will probably occur below Beartop Lookout. Expect the area North of Biggs Creek to become effected by active spots near the mouth of Rock Creek more than anything in Dryden Creek. It is possible that if a strong NW flow or surface wind hits the area that the Dryden Creek area would then become more active and probably make runs towards Biggs Creek to the SE. There is some younger stands of LP in Lynx Creek and Biggs Creek areas that would possibly retard fire spread some in that direction.

Spots West of Biggs Creek Flat and at junction of Rock Creek and Red Shale Cr. Expect spot West of Biggs Creek Flat and East of North Fork of Sun River to most probably give this area the most activity over the next few days. This is a very similar scenario that happened prior to the Ray Creek run. There is quite a bit of older growth timber all along the West side of Biggs Creek Flat that will torch. The SW-W flow would push fire toward the North side of Biggs Creek to Beartop Lookout ridge. Biggs Creek is a different drainage topography wise than the other drainages to the North. It is wider and after entering the main canyon the fuels are a lot sparser. There is also a lot more real young LP South of Biggs Creek that will aid in retarding fire spread. I do not foresee any problems with fire entering Biggs Creek and spreading towards the wilderness boundary in Miners Creek due to the sparse fuels. Biggs also takes a very sharp turn to the South near its head and this should also act as a retarding effect on fire spread along with the sparse fuels. A NW wind from a frontal passage would spread the fire in a Southeasterly direction towards Biggs Creek and points South and there is plenty of older timber to keep the fire going in this direction down the North Fork.

CONTINGENCY PLAN

Route Creek Area: As the fire West of the North Fork becomes active and produces spot fires around the mouth of Route Creek there are some tactical measures that could be taken to retard the spread of these spots and possibly prevent Route Creek from burning as Ray and Headquarters Creek areas did on July 28th and July 31st.

Well planned helicopter water bucket drops on these spot fires could be very effective. The young stands of Lodgepole pine in the area will help in controlling intensities a little. These bucket drops

could buy more time until the weather becomes more favorable for controlling the fire spread naturally.

It doesn't look as though there is an adequate location for a hand fireline to do any holding action from around the area.

Biggs Creek Area: A limited control action could be taken in the Biggs Creek area around the open parks near the North Fork of the Sun River on the East side. These parks are fairly large and are grassy fuels. The grasses are cured out and could present problems if any holding and/or burnout operations were to take place. There is also young lodgepole stands South of these grassy parks that would help in slowing fire spread and controlling any spots that might show up in these areas. The helicopter bucket would also be very effective around the Biggs Creek area. Control action along this southern boundary of the fire would most probably be effective unless a NW-N wind happened.

Rick Lasko
Byron Bonney

FIRE BEHAVIOR SERVICE CENTER

Most RAWS stations last night failed to record much in the way of fuel moisture recovery from yesterday afternoon low values. Underneath the cloud cover of the disturbance which is currently passing over us from the NW, temperatures stayed very warm, and the winds were strong in the 15-25 mph range. As the front passes this morning temperatures will cool with a chance of scattered light rain showers. At the moment a band of these light showers extends from the northern border of the Region down through Idaho and the western edge of Montana. Isolated rain cells were being picked up on radar just to the west of Kalispell. These showers may wet down the new Lodgepole Creek fire on the Flathead NF and in the Great Bear Wilderness.

Expect strong winds to continue and affect the fire behavior. No evidence at this time that upper level wind conditions will contribute to the fire behavior any more than what the current strong low elevation winds are doing. Relative humidity will rise behind the front contributing to slight increases in fuel moisture. However, moistures are low enough already that you can expect very active burning influenced by local wind conditions. In areas of heavy fuel with live young trees to act as ladders, crowning and spotting is probable. Areas which receive heavier rain showers will have a day or two respite with higher fuel moisture, but we can expect drying conditions returning. What rains are developing will not be sufficiently wetting to have any long-term effect. No lightning has been recorded with this system.

Chuck Bushey
commercial 329-4850 (FTS 548)
DG RICOPLANS:R01D

8/6/88 Saturday

McBratney and a crew of 2 District people finish protective cover and sprinkler system at the Wrong Creek Cabin. Light to moderate rainfall from 1030 to 1130 dampens the fire from the previous day's very active level. Nonetheless, two areas are fairly active at the end of a sunny afternoon: the north edge from the North Fork of the Sun River west to Gates Creek and the south edge near the packbridge.

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
1018	52°	77%		2-5 SW	

SPOT FORECAST FOR..GATES PARK 1145 AM MDT...SATURDAY...AUGUST 6, 1988

1. DISCUSSION: BAND OF LIGHT RAIN MOVING QUICKLY EAST THROUGH AREA THIS MORNING. THIS ASSOCIATED WITH A COOL FRONTAL SYSTEM. SOME CLEARING SHOULD OCCUR THIS AFTERNOON. UPPER LEVEL TROUGH OF LOW PRESSURE OVERHEAD WILL MOVE EAST TOMORROW AS WARM HIGH PRESSURE AGAIN MON INTO MIDWEEK.

2. FOR THE FIRST BURN PERIOD...TODAY
   A. WEATHER... A LITTLE LIGHT RAIN ENDING THIS AFTERNOON. CHANCE OF A SHOWER/ THUNDERSHOWER LATE TODAY.
   B. CWR...20 PCT
   C. TEMPERATURE.. MAX 65 TO 72
   D. HUMIDITY... MIN 40 TO 55 PCT
   E. WIND..EYE LEVEL...VARIABLE AND ERRATIC BOTTOMS WITH GUSTS 15..SW TO NW 15 TO 30 GUSTY WESTERLY EXPOSED AREAS.

3. FOR THE SECOND BURN PERIOD... TONIGHT...
   A. WEATHER... PARTLY CLOUDY. CHANCE OF ISOLATED SHOWER/THUNDERSHOWER
   B. CWR... 10 PCT
   C. TEMPERATURE... COOLER. LOW 40 TO 45
   D. HUMIDITY... MAXIMUM 70 TO 80 PCT
   E. WIND EYE LEVEL VARIABLE 2-6 WITH W TO NW 10 TO 20 HIGHER RIDGES.

4. OUTLOOK FOR FOLLOWING BURN PERIOD... SUNDAY MILD WITH MODERATE HUMIDITY AND NW TO NE WIND 5 TO 15 MPH

Gorman, Smith, Casey, Kamrud and Jane Weber, Public Information Officer, meet to go over the objectives for the Gates Park Fire.

ROCKY MOUNTAIN RANGER DISTRICT MEETING
Regarding
GATES PARK FIRE

August 6, 1988

THOSE ATTENDING: Dale Gorman, Bob Casey, Dick Smith, Jane Weber, Norm Kamrud

OBJECTIVES DECIDED:

1. Provide for safety of public and employees.
2. Protect structures from fire.
3. Protect Wilderness boundaries; keep fire within the Wilderness.
4. Assign new FBA to work with Byron Bonney; check on Rick Lasko.
5. Meet on Monday, August 8 at Choteau at 0900. FBA to have contingency ready on Wilderness boundary, Route Creek, Biggs Creek and Observation Fire Management Unit boundary to the south.
6. Fire Progress Report was given to Gorman and Smith. Helicopter bucket work was mentioned as an option.
7. Fly fire when movement is indicated.
8. Dick Smith to contact Tomascak to fly fire with Horn.
9. 34,000 acres of intense burn is a possible watershed limit. This is to be checked by our watershed people.
10. Kamrud to fly with Jerry Nypen, Manager Greenfields Irrigation District. Chuck Frey, Forest Staff Officer will make arrangements.
11. Kamrud to make arrangements to fly outfitters.

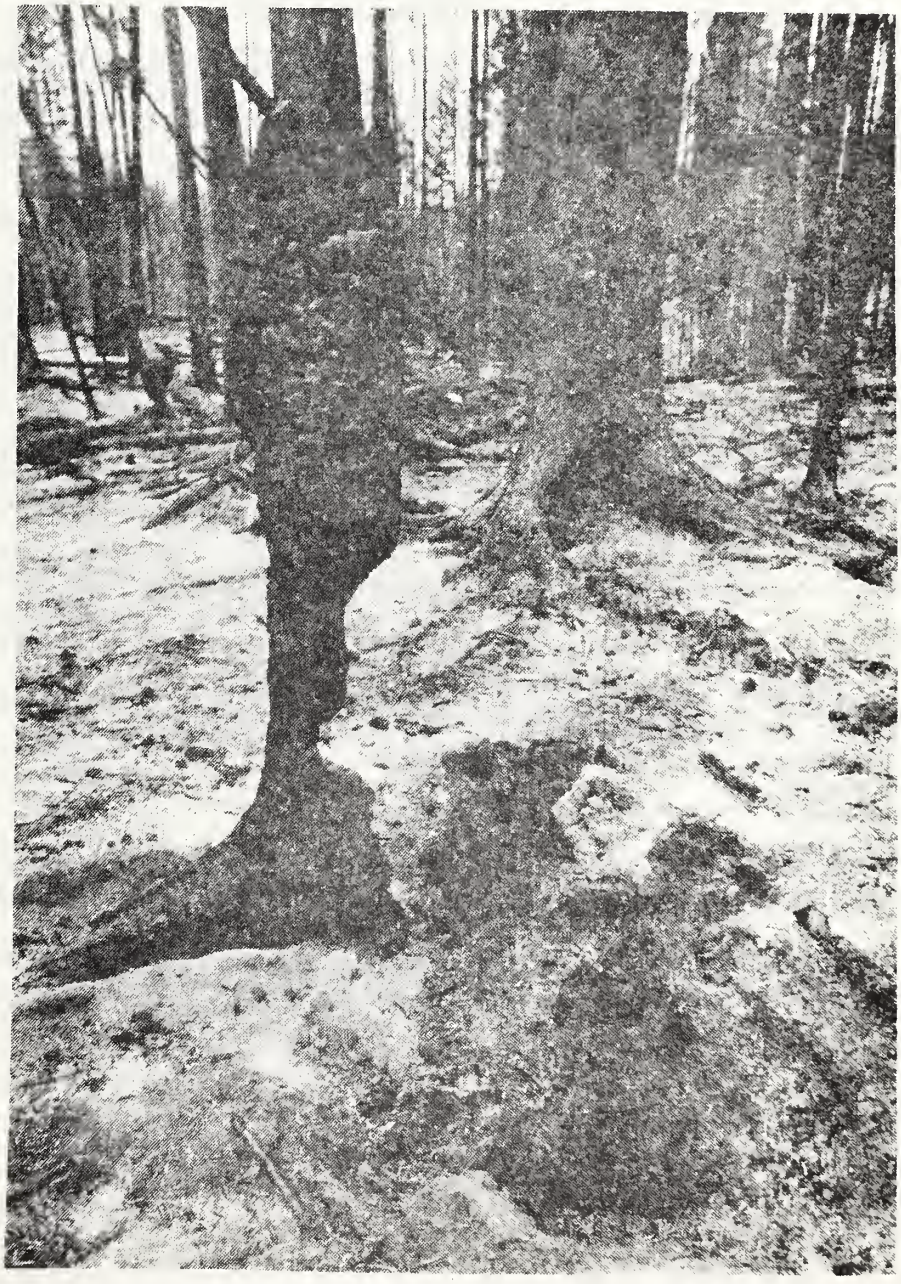
BENCHMARK RAWS 8/6/88

TIME	READING
1846	MAX. TEMP. 70°
1846-1946	MIN. R/H 21%
1886	MIN. 1 HR. 8%
0546	MAXS. R/H 83%

BEARTOP LOOKOUT

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
1420	20 MPH GUSTS TO 35 MPH W	.7	.04 RAIN

The fire increases to 17,063 acres.



In some places the fire burned very hot. K. Westly Photo

8/7/88 Sunday

Overcast skies until late afternoon and higher humidities help keep fire activity very low all day. The western perimeter south of Red Shale Creek and spot fires around the packbridge are the hottest areas on this cool day.

Smith flies fire and meets with Love, Kamrud, Bonney, and Rich Lasco (FBA to replace Byron) to go over Gorman's expectancy for the contingency plan.

SPOT FORECAST FOR..GATES PARK 2 PM MDT SUNDAY AUGUST 7, 1988

1. DISCUSSION: SATELLITE DETECT WEAK DISTURBANCE MOVING THROUGH THE FIRE AREA SUNDAY AFTERNOON AND EARLY EVENING CAUSING SOME CLOUDS AND FEW ISOLATED SHOWERS. HIGH PRESSURE OVER THE NORTHERN ROCKIES FOR FAIR SKIES AND SLOWLY WARMING TEMPERATURES MONDAY AND TUESDAY.

2. FOR TONIGHT.....
   A. WEATHER...CHANCE OF EVENING SHOWER FOLLOWED BY CLEARING TONIGHT.
   B. CWR... DECREASING TO ZERO LATER TONIGHT.
   C. TEMPERATURE.. LOWEST 5000 FT 41 AND 8000 FEET 36
   D. HUMIDITY...HIGHEST 5000 FT 58% AND 8000 FEET 84%
   E. WIND..EYE LEVEL... LIGHT NORTHWEST 3 TO 6 MPH

3. FOR MONDAY.....
   A. WEATHER... MOSTLY SUNNY
   B. CWR... BELOW 10 PERCENT
   C. TEMPERATURE... HIGHEST 5000 FT 71 AND 8000 FT 56
   D. HUMIDITY...LOWEST 5000 FT 25% AND 8000 FT 37%
   E. WIND..EYE LEVEL...LIGHT AND VARIABLE 4 TO 8 MPH AFTERNOON

4. OUTLOOK FOR TUESDAY....SUNNY DRY AND A FEW DEGREES WARMER WITH LIGHT WINDS.

BENCHMARK RAWS 8/7/88

TIME	READING
1846	MAX. TEMP. 70°
1846-1946	MIN. R/H 21%
1846	MIN. 1 HR. 5%
0546	MAX. R/H 83%

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
1125	CALM	.8	

The fire size is 17,393 acres.

8/8/88 Monday

Bonney makes an aerial survey of the Gates Park Fire and reports:

> "The fire was burning most active about 1 1/2 miles NE of Lookout Mountain in an area of old growth subalpine fir and spruce. The fire was putting up a large convection column which was moving to the west backing upslope into the prevailing wind."
>
> "There were also some active areas near the mouth of Red Shale Creek and on the north end at Route Creek. These areas were just smoking, no visible flame was observed."

Beartop Lookout reports more fire activity than previous two days.

Valdon Hancock, Forest Hydrologist, surveys the fire by helicopter, setting down at several points, to gather data on erosion and runoff potential.

Gates Park Prescribed Fire Briefing--Choteau--August 8, 1988.

On this date a meeting was held to discuss the status of the Gates Park Fire. Those present at the meeting included: Dale Gorman, Dick Smith, Jane Weber, Bob Casey, Walt Tomascak, Norm Kamrud, Byron Bonney, Rich Lasco, and Tim Love.

Norm Kamrud discussed the status of the Gates Park Fire in terms of its past behavior, present size, and active sections. After reviewing the most recent video of the fire, Rich Lasco and Byron Bonney (FBAs) discussed the fires projected behavior and possible actions to take in order to influence the fire's behavior. (See Gates Park Contingency Plan dated 8/8/88).

Following the briefing, Supervisor Dale Gorman made the following decisions:

Briggs Creek Area:

Take the limited actions stated in the Gates Park Prescribed Fire Contingency Plan (ie. set up pumps and hose lay to retard/extinguish spots in the vicinity of Biggs Creek Flat).

Route Creek Area:

1. Send a person into the Route Creek area to recon the fuels to determine what actions would be appropriate to retard the fire's spread into the Route Creek drainage.

2. Walt Tomascak should attempt to contact a person knowledgeable in aerial retardant operations to determine the feasibility of effectively retarding the fire with air attack.

BENCHMARK RAWS 8/8/88

TIME	READING
1546-1646	MAX. TEMP. 75°
1746	MIN. R/H 19%
1546	MIN. 1 HR. 4%
0546-0746	MAX. R/H 100%

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
1413	5-8 MPH SW	.1	

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
1652	70°	24%	5%	0-5 W	CLEAR
1840	68°	25%	10%	4-8 NW	.8 LIGHT HIGH CLOUD COVER

Even though there is more activity, the fire perimeter remains relatively unchanged.

8/8/88 Fire burning actively in old growth east of Lookout Mt. B. Bonney Photo

GATES PARK PRESCRIBED FIRE
CONTINGENCY PLAN
8/8/88

A. *REPORTING REQUIREMENTS*

1. Organization

Forest Supervisor

Walt Tomascak--- | ---Sonny Stiger

RO Liaison/Technical Advisor--- | ---Fire Information Coordinator

Bob Casey, Team Leader
Gates Park Prescribed Fire

Impact Analysis Team
Norm Kamrud - Prescribed Fire Manager Alternate Team Leader
Byron Bonney - Fire Behavior Analyst
Dick Smith - SO Fire Staff
Tim Love - Wilderness Coordinator
Jane Weber - Fire Information
Walt Tomascak - Advisor
Rick Lasko - Fire Behavior Analyst

2. Location: Gates Park, T24N R10W

3. Acres: 20,800 (as of 8/7/88)

4. Fuels: Old growth Lodgepole Pine with advanced S/F understory and mature S/F bottoms (fuel model G)

5. Topography: Steep with drainages from west flowing into the North Fork of the Sun River.

6. Significant Fire Behavior: Crowning runs to east with strong SW flow, otherwise upslope with occasional crowning and torching.

7. Remarks: See Fire Behavior report (Bonney, 8/5/88) and Fire Behavior/Fuels report (Stiger 7/25/88).

B. *OBJECTIVES*

1. Protect Life.

2. Protect existing structures or facilities within the Wilderness.

3. Prevent the fire from escaping the Wilderness Boundary.

C. *CONTINGENCY REQUIREMENTS*

1. Map of fire permimeter with behavior and size indicated (map dated 8/7/88).

2. Chains of line to be built: unknown at present, however enough to control spotting along the east side of the wilderness boundary.

a. Sector Breakdown

Biggs Creek Area
The potential exists for fire exiting the Wilderness at Grouse Creek. Once the fire extends south of Biggs Creek, action should be taken to prevent fire from becoming established southeast of Sulphur Creek. Fire established in this area would most likely result in a north easterly run through an area of fuel model G, resulting in extensive and rapid burnout of Grouse Creek and subsequent spotting into the head of the South Fork of Deep Creek which contains continuous old growth fuels and is outside of the Wilderness Boundary.

The area north of Biggs Creek does not appear to present a problem due to prevailing west and southwest flows. A continued west and southwest flow would keep fire moving on the north side of Biggs Creek to Beartop Lookout Ridge. Biggs creek is a different drainage topographically than drainages to the north. It is wider and after entering the main canyon fuels become sparser. Young stands of Lodgepole south of Biggs Creek will also retard fire spread. The probability of fire entering Biggs Creek and spreading towards the Wilderness Boundary in Miners Creek is low due to discontinuous fuels.

Actions
Placement of two Mark II pumps. One pump would be located at the confluence of Red Shale and Rock Creek and the other pump would be located at the North Fork of the Sun River near the fire's edge. Existing spot(s) would be extinguished west of Red Shale near Rock Creek. The fire's edge from Red Shale to the North Fork Sun would be retarded to prevent the fire from crossing Rock Creek to the south and west. This would help insure that the fire would not flank west and south of Biggs Creek flat.

A helicopter with bucket would be used to retard spots west and north of Biggs Creek flat (as needed).

Beartop Lookout would monitor the area for crew safety.

Projections
Projections indicate that the fire would take in excess of 20 days to reach Moose Creek, should the fire become established south of Rock Creek (assuming a west/southwesterly flow aloft).

Cost estimate - $5,000.00

Route Creek Area
There is a strong potential for Route Creek drainage to exhibit fire behavior similar to that experienced in Ray Creek on July 28th. In that instance, the fire made a strong movement to

the east, reaching the Wilderness Boundary, a distance of approximately 4.5 miles in 4 hours (a rate of spread of approximately 90 chains per hour). Spotting occurred 3/4 mile east of the Wilderness Boundary. This can be expected to occur in Route Creek under the following weather conditions: relative humidities of less than 20%, wind speeds in excess of 9 mph from the west/southwest, temperatures of more than 80 degrees Farenheit.

The fire is presently established in the mouth of Route Creek. If the above conditions are met, the complete burning of the drainage is likely to occur.

Spotting ahead of the fire can be expected to occur. If a convection column builds to a vertical height experienced during the Ray Creek run, then spotting can be expected in areas outside the Wilderness in the head of the Middle Fork of the Teton and Waldron Creek drainages.

Actions
At this point, it is premature to discuss possible actions in detail without additional recon. However, some possible alternatives to retard the spread of fire in Route Creek could include: constructing handline, burnout and hold, pumps and hose lay, retardant drops and helicopter water bucket work.

Cost
Regardless of the alternative selected, the costs would likely exceed the present allocation of $15,000.

3. Resistance to control: High (fuel model G).

4. Camps, water sources, helispots, access areas; ID on map.

5. Required manpower to contain: Biggs Creek Area - Helicopter, crew and six people working pumps for a five day period. Route Creek - to be determined.

6. Constraints to suppression effort: normal wilderness constraints.

7. Facilities ahead of fire: Gates Park Guard Station, Wrong Creek Guard Station, Cabin Creek Guard Station, packbridge across North Fork of the Sun River, outfitter camps.

8. Facility Protection:

Gates Park Building - a Mark III pump and hose lay is setup around the facility using Gates Creek as a water source. In addition, a fire shelter has been deployed over the Gates Park roof to protect the structure from fire brands. All combustible fuels (vegetation) around buildings has been removed and a strip around the facility has been burned out to prevent fire spread.

Personnel assigned to Gates Park have fire shelters, are knowledgeable of escape routes and are monitored by Beartop Lookout.

Beartop Lookout - The Lookout can be removed by helicopter. If necessary, the Lookout can move to an escape route and deploy a fire shelter. The Lookout is generally fire secure since it is located on a rock ridge.

Bridge Protection - A Mark III pump, hose lay and sprinkler system has been setup on the packbridge for the duration of the fire.

Wrong Creek Cabin - A Mark III pump with hose lay is setup around the cabin using Wrong Creek as a water source. A fire shelter has deployed over the cabin roof to protect the structure from fire brands. All combustible fuels around the cabin have been removed.

Cabin Creek Cabin - A pump and hose lay would be setup around the cabin. A fire shelter would be deployed over the cabin's roof. Vegetation would be removed form the vicinity of the cabin.

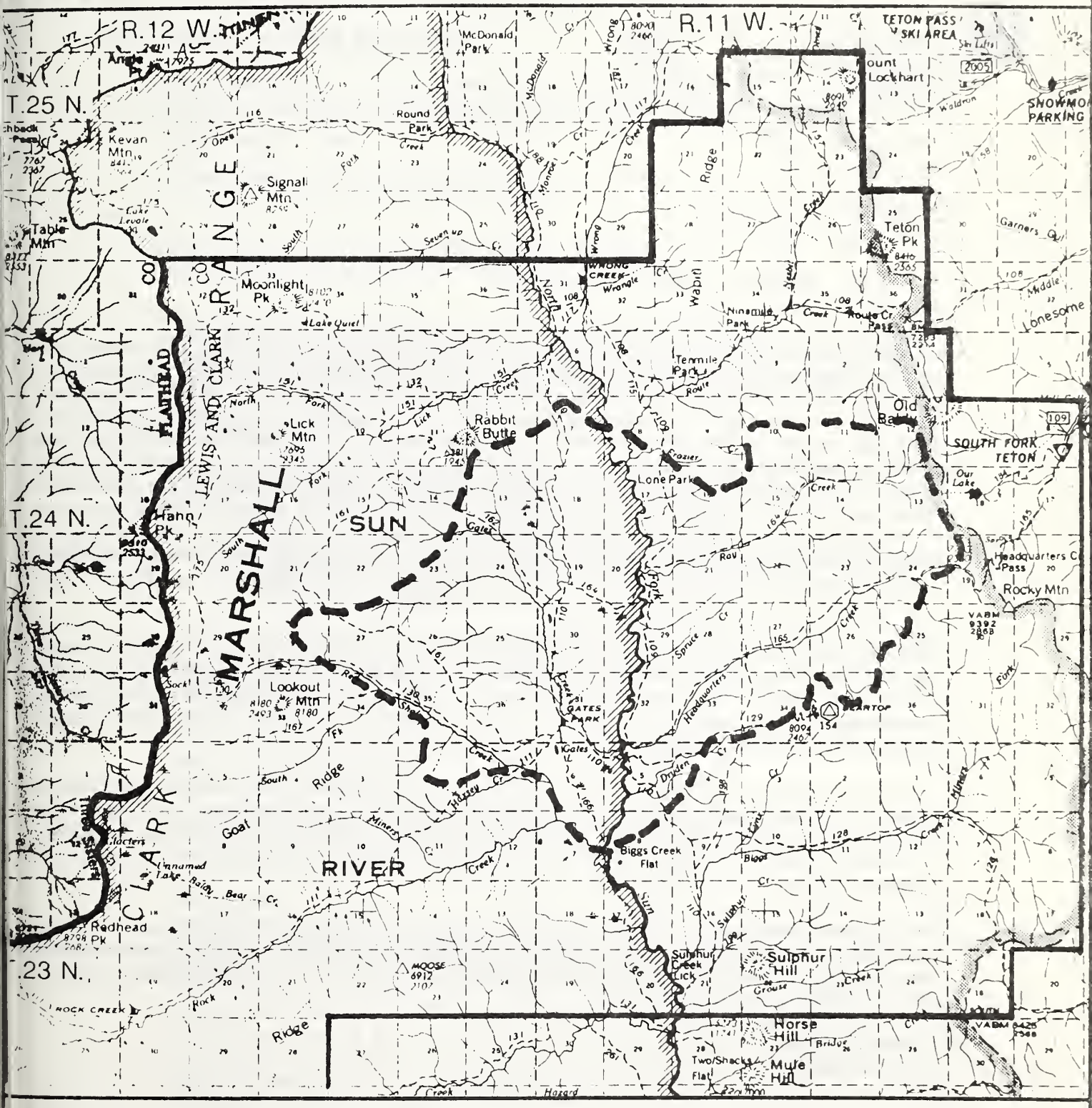
Outfitter Camps - No action has been taken to protect outfitter camps at this point. However, if limited action can be taken to protect a camp, it will be done.

9. Watershed Protection - The North Fork of the Sun River is a major drainage of Gibson Reservoir. The Irrigation District has expressed concern that the fire's size be limited to a set acreage to prevent heavy run-offs and increased sedimentation.

The Forest hydrologist has calculated that 34,000 acres would represent a 5% water yield increase for the North Fork Sun River.

8/8/88 Looking down Route Creek. B. Bonney Photo

MAP 11 — 8/8/88 Gates Park Fire



United States Department of Agriculture **Forest Service** **Lewis & Clark NF**

REPLY TO: 2320 **Date:** August 8, 1988

SUBJECT: Gates Park Fire

TO: Greenfields Irrigation District Users

In managing classified Wilderness, the Forest Service's main goal is to retain the natural character of the land by limiting the effects of man-caused activities. Since the passage of the Wilderness Act in 1964 and the classification of the Bob Marshall Wilderness, we have tried to limit our impacts in the Wilderness when managing our trails, outfitting, and facilities programs. We have traditionally managed our fire program differently, actively suppressing fire in Wilderness at the expense of retaining this "naturalness." The Wilderness integrity was somewhat violated each time we dispatched firefighters to create fireline in their efforts to control wildfires. Recently, we have come to realize the important role that fire has in Wilderness. Therefore, we have initiated the "prescribed" fire management program in the Bob Marshall Wilderness Complex, allowing naturally-caused (lightning) fires to burn where they are not a threat to life, property or expansion outside the Wilderness. The Gates Park Fire meets our "prescription" for allowing the fire to burn naturally. The fire has been growing since July 11, 1988, when it was first detected. It continues to meet our objectives for allowing natural fire to burn in the Wilderness.

Fire has long played a hand in shaping the Bob Marshall Wilderness. For thousands of years, a natural harmony has existed between fire and the watersheds in the Bob Marshall. Because there have been some concerns raised by the irrigators in the Greenfields Irrigation District. I felt it was important to let you know the Forest Service philosophy in prescribed fire and to address some of the concerns that we have heard voiced about the Gates Park Fire.

I want to re-emphasize that my goal is to manage the Bob Marshal Wilderness to retain its wilderness integrity. Fire plays an important part in this scenario. In managing the Gates Park Fire, I have three priorities: #1. to protect lives; #2. to protect existing structures or facilities within the Wilderness and #3. to prevent the fire from escaping the Wilderness boundary. We are managing this fire with these three priorities in mind.

To put the watershed into perspective, below are some facts and projections about the Gates Park Fire as it relates to the North Fork of the Sun River drainage and the Gibson Reservoir. If you have any questions about the fire, please contact either the Forest headquarters at 791-7700 or the Rocky Mountain Ranger District in Choteau at 466-5341.

JOHN D. GORMAN
Forest Supervisor

FACTS AND PREDICTIONS ABOUT THE UPPER SUN RIVER WATERSHED

WHAT ARE THE FACTS?

Gibson Reservoir, constructed in 1929, has a holding capacity of 99,000 acre feet of water. Based on a 1930 survey, the annual natural sedimentation rate in the reservoir is 130 acre feet/year. Based on this rate, the reservoir has a useful life of 750 years.

Gibson Reservoir usually fills with water by mid-June. Excess early runoff cannot be stored and is released over the dam without irrigation use.

24-year records indicate that the North Fork of the Sun River (based on a 165,000 acre area) measures an average streamflow of 261,400 acre feet/year.

As of August 4, the Gates Park Fire has burned an area having a perimeter of 20,800 acres. Within this perimeter area, 7000 acres has burned intensely enough to remove most of the vegetation. The most intense burning has occurred in the Ray Creek and Headquarters Creek drainages. The remaining acres have either been lightly burned or seen no fire whatsoever.

WHAT ARE THE PREDICTIONS?

Water Yield - The projected increase in water yield attributed to the Gates Park fire is small, about 1%. The increase is calculated like this:

> 0.38 acre feet increase/acre burned intensively x 7000 acres burned intensively = 2660 acre feet/year from the North Fork of the Sun River or 1% of the 261,400 acre feet/year yield from the North Fork.

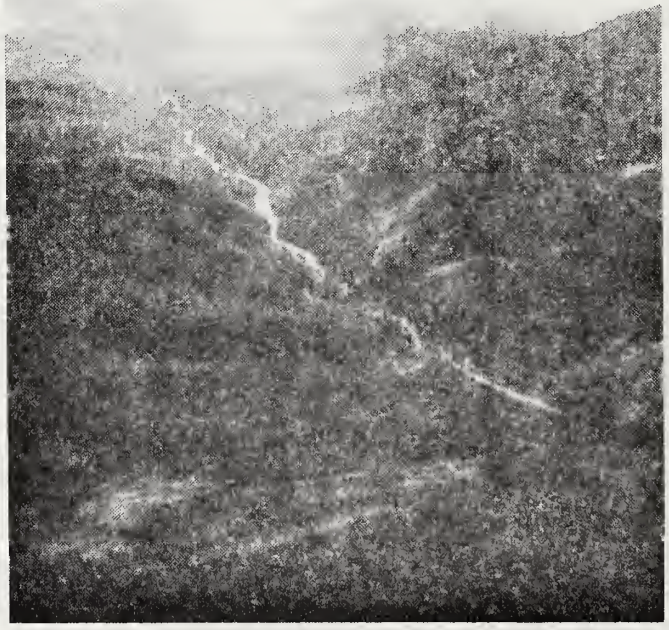
Because the water flow into Gibson Reservoir includes both the North Fork Sun and the South Fork Sun drainages, this 1% relates to actually 0.5% of the total water which drains into the Gibson Reservoir.

When the Forest Service is planning timber harvesting activities, we generally use 5-15% water yield increase as an acceptable level. Therefore, the 0.5% increase that is projected as a result of the acreage currently burned on the Gates Park Fire is small.

To reach the lowend of the acceptable guideline (5%), approximately 35,000 acres would have to experience intensive burning, compared to the 7000 acres currently intensively burned.

Sedimentation - Fire, where it burns intensively, can cause a chemical change in the soil that can make the surface water repellent for a short period of time. In this condition, the chance for erosion is increased especially in the event of a severe thunderstorm with high levels of precipitation (2-5 inches). No one can predict the chances of a thunderstorm happening. It is one of the risks of managing the Wilderness with prescribed fire. If it does happen, erosion in the steeper drainages that have burned intensely (Headquarters and Ray Creeks), is expected. However, most of this erosion should be limited to these specific drainages. With the gradual gradient of the North Fork of the Sun and distance from the fire to Gibson Reservoir, deposition from any erosion in Headquarters and Ray Creeks would be insignificant in comparison to the natural sedimentation loading already occurring. In our estimation, only 5% of the

total sedimentation (includes all sedimentation from the basin, including that which would occur without the fire) could be attributed to the burn the first year after the fire. The following three years only 0.5% of the total sedimentation would be attributable to the fire. With these sedimentation rates, the useable life of the Reservoir (750 years remaining) would be shortened by about one month.



8/8/88 Looking down Biggs Creek. B. Bonney Photo

8/9/88 Tuesday

McBratney and a crew of five District people go into the Biggs Flat area to start action on decisions made at the 8/8/88 meeting. Three people work east of the river in the Biggs Flat area, while the remaining three work west of the river in the Rock Creek area. They lay hose and work with a helicopter on bucket drops to create a wet line to prevent rapid fire spread toward the Wilderness boundary.

SPOT FORECAST FOR..GATES PARK 0945 AM MDT TUE AUG 9, 1988

1. DISCUSSION: WEAK FRONTAL SYSTEM BRUSHING AREA TODAY AS STORM MOVES EAST IN CANADA. AREA WILL REMAIN ALONG TOP EDGE OF HIGH PRESSURE NEXT FEW DAYS. EFFECTS OF FRONT...WIND

2. FOR THE FIRST BURN PERIOD...THIS AFTERNOON
   A. WEATHER...PARTLY CLOUDY
   B. CWR... ZERO
   C. TEMPERATURE.. FROM NEAR 78 BOTTOMS TO 60S HIGHER ELEVATIONS..
   D. HUMIDITY... 18 TO 28 PCT.
   E. WIND..EYELEVEL...VARIABLE 0 TO 10 WITH SW TO NW 15 TO 25 WESTERLY EXPOSED AREAS.

3. FOR THE SECOND BURN PERIOD...TONIGHT
   A. WEATHER... CLEAR TO PARTLY CLOUDY
   B. CWR... ZERO
   C. TEMPERATURE...45 TO 55
   D. HUMIDITY... FROM NEAR 70 PCT BOTTOMS TO 40 PCT SLOPES/RIDGES
   E. WIND..EYE LEVEL... LIGHT TERRAIN TYPE SHELTERED AREAS...W TO NW 5 TO 15 EXPOSED AREAS.

4. OUTLOOK FOR FOLLOWING BURN PERIOD...WEDNESDAY WARM AND DRY. WINDS MOSTLY LIGHT TERRAIN TYPE MORNING...W TO NW 10 TO 20 EXPOSED AREAS AFTERNOON.

Stiger recons the Route Creek area from the ground and reports:

> "I looked at the fuels and fire front in the mouth of Route Creek between about 1300 and 1600. I think the primary thing to relate is that the fire is actively burning through rather open lodgepole stands. It is consuming the beargrass and whortleberry completely with about a 2 foot flame length. I did not have time to measure rate of spread but it was moving briskly up a gentle slope. Whenever fir understory was encountered, it torched and carried fire up the boles of the lodgepole and torched the lodgepole. Down dead fuel was being completely consumed. From this I would say that under the extreme dry conditions we now have that this fire will continue to move in all directions. Rate of spread of course will be dependent upon wind and slope. I believe the fire will continue to seek out pockets of old growth and, if wind and slope allow, will crown and make major runs until weather or fuel conditions change."
>
> "I looked at the fuels from the stand point of making water bucket drops and/or retardant drops. I believe that both could be used quite effectively. The tree crowns are more open and the fuels much lighter than in the mouth of Ray Creek or Headquarters Creek."

Beartop Lookout reports active burning is in mid afternoon, primarily in: 1) the northern perimeter from southeast of Rabbit Butte east to the North Fork of the Sun River; 2) the area just to the south of the packbridge; and 3) the Red Shale drainage, especially up the east end of Goat Ridge.

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
0850 1631	54° 78°	62% 23%		calm 4-8 SW Gusts to 20	

BENCHMARK RAWS 8/9/88

TIME	READING
1746	MAX. TEMP. 81°
1646-1746	MIN. R/H 23%
1446-1746	MIN. 1 HR. 4%
0246	MAX. R/H 52%

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
1400	4-8 W	.2	

From mapping based on photographs from Beartop Lookout, the fire grew an estimated 900 acres on the 7th, 8th, and 9th, to a total of 17,800 with 1900 acres inside the perimeter but unburned around Gates Park. The actual size is 17,758 acres.

The Canyon Creek Fire on the Lolo National Forest crosses the Forest boundary on to the Rocky Mountain District during the evening of 8/9/88. This results in a major effort for the Forest in the management of the fire and the coordination with the Lolo and Helena Forests.

8/9/88 Canyon Creek Prescribed Fire heading for the Lewis and Clark.

8/10/88 Wednesday

The Impact Analysis Team meets in Lincoln. They agree to assign a three person Tactical Team to oversee the management of the Gates Park Fire: Dave Bunnell, Leader; Wally Bennett, Operations Chief, and Rick Carlson, FBA.

McBratney and the crew of five District people continue their work in Biggs Flats and in the mouth of Rock Creek. At 1030 two helicopters start bucket work: one in Biggs Flat and one in Route Creek. At 1200 helicopter bucket work is diverted from Route Creek to Biggs to help the ground crew as the fire is beginning to out flank them.

1547: McBratney reports that the fire is headed north of Biggs Flats and has just started into the edge of the grass. Rick Carlson, FBA on the Lodgepole Fire north of Gates Park, is requested to report to Gates Park as soon as possible. Roger Steerman, Judith District FMO, is put on call for possible burnout work.

1630: The fire is crossing the Flats and the fire intensity is such that McBratney pulls everyone back to a gravel bar in the North Fork of the Sun River for safety.

At 1700 Smith, Stiger, Kamrud and Love meet to review the finding of Stiger's fuel recon in Route Creek. Stiger states the fire in Route Creek is burning in a transitional fuel model H-G. He found the fire's spread being carried by beargrass and grouse whortleberry and torching young sub-Ipine fir whenever they are encountered. Stiger feels a helicopter with a bucket could retard the fire's advance in Route Creek. Smith, Acting Forest Supervisor, makes the following decisions:

1. Utilize helicopter bucket operation in Route Creek to slow the fire's rate of spread.

2. Utilize helicopter bucket operation to augment crews working on spots near Biggs Flat.

Beartop reports the fire in the Biggs Flats area is very active, especially from 1630 t0 1730, but the fire was most active in the headwaters of Gates Creek. Activity peaked there from 1830-1930. A hygrothermograph is set up at Beartop to monitor temperature and humidity 24 hours a day.

The Montana Department of Health and Environmental Sciences set up an air quality monitor at the Choteau High School to record the effect of the Gates Park and the Canyon Creek Prescribed Fires on air quality.

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
0900 1832	52° 78°	66% 22%	13% 7%	light W 4-8 SW	

SPOT FORECAST FOR..GATES PARK 1915 PM MDT TUE AUGUST 10, 1988

1. DISCUSSION: AREA WILL CONTINUE UNDER DRY-WARM WESTERLY TO SOUTHWEST WIND FLOW. AT THE SURFACE...WEAK HIGH PRESSURE MOVING ACROSS CANADA SHOULD PRODUCE A LITTLE NORTH TO SOUTH PRESSURE GRADIENT TONIGHT AND WEDNESDAY.

2. FOR THE FIRST BURN PERIOD...TONIGHT
A. WEATHER...CLEAR TO PARTLY CLOUDY
B. CWR... ZERO

C. TEMPERATURE... MINIMUMS FROM 45 TO 55.
D. HUMIDITY... RISING TO NEAR 70 PCT BOTTOMS...ONLY NEAR 40 PCT SLOPE/RIDGE.
E. WIND..EYELEVEL...VARIABLE 2 TO 8...SW TO NW 8 TO 15 RIDGES/ EXPOSED AREAS.

3. FOR THE SECOND BURN PERIOD...THURSDAY
A. WEATHER... MOSTLY SUNNY WITH SCATTERED CLOUDS.
B. CWR... ZERO
C. TEMPERATURE...MAXIMUMS FROM 75 TO 90 BOTTOM.
D. HUMIDITY... MINIMUMS 15 TO 25 PCT.
E. WIND..EYE LEVEL...VARIABLE 3 TO 8 WITH NW TO NE 8 TO 15 RIDGES/ EXPOSED AREAS...WEST 20 AT TIMES ACROSS HIGHER RIDGES AFTERNOON HOURS.

4. OUTLOOK FOR FOLLOWING BURN PERIOD...THURSDAY NIGHT AND FRIDAY STILL WARM AND DRY WITH MODERATE SOUTHWEST WINDS LIKELY. SLIGHT CHANCE OF A FEW THUNDERSTORMS IN AREA.

OUTLOOK FOR SATURDAY AND SUNDAY...WARM AND VERY DRY.

BENCHMARK RAWS 8/10/88

TIME	READING
1746	MAX. TEMP. 82°
1846-1946	MIN. R/H 15%
1546-1946	MIN. 1 HR. 4%
0646	MAX. R/H 88%

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
1400	5-8 MPH W	.4	

8/11/88 Thursday

At 0700, McBratney reports the fire crossed the Biggs Trail overnight. The decision is made to abandon helicopter bucket drops and hose lay water efforts in the Grouse Creek area because the work is not effective. McBratney and the five District people are removed from the Biggs area by helicopter.

The use of water gel explosive is approved by the Director of Aviation and Fire Management.

Overcast weather, moving in during the afternoon, keeps the fire less active than yesterday, with the most active burning period from 1500 to 1630. The most active area is again in the headwaters of Gates Creek, but the area due west of Biggs Flats is also very active.

BENCHMARK RAWS 8/11/88

TIME	READING
1246-1346	MAX. WINDSPEED 13 MPH N/NE WIND
1246-1346	MAX. TEMP. 76°
1146	MIN. R/H 32%
1146-1246,1446-1546	MIN. 1 HR. 6%
0646-0746	MAX. R/H 71%

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
0905	52°	66%	13%	calm	
1515	79°	29%	5%	5-10 S	.3-.4 CC

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
1400	8-12 MPH W	.3	

8/12/88 Friday

Dave Bunnell, Fire Management Officer on the Flathead Forest, takes over as Tactical Team Leader of the Gates Park Fire. After an aerial survey of the fire, he orders Rick Carlson, FBA, and prepares preliminary maps and a draft of the first level contingency plan. There are two areas of concern: 1) at the head of Grouse Creek on fire's southeast flank, and 2) at the head of Nesbitt Creek, a tributary of Route Creek, on the fire's northeast flank. These are areas where continuous fuel across the Wilderness boundary offers potential for the fire to leave the Wilderness.

A press release emphasizes no effort is being made to contain, control, or even limit the acreage burnt on the Gates Park Prescribed Fire. The sole objective is to slow portions of the fire that have the potential to leave the Wilderness.

The fire has remained in prescription, spreading as anticipated with the warm, dry weather conditions. The smoke inversion did not lift until early afternoon and fire activity has been low all day. Thundershowers, some very heavy, move across the area from 1700 to 2130.

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
0900 1400 1749	53° 77° -	77% 36% -	15% 5% -	calm 2-5 G10 S	 mostly clear 0.10" precip and still drizzling

SPOT FORECAST FOR..GATES PARK 230 PM FRIDAY AUGUST 12, 1988

1. DISCUSSION: WARM S TO SW WIND FLOW PATTERN WILL CONTINUE. SURGES OF MOISTURE STAYING MOSTLY JUST TO SE AND E OF AREA. WIND STILL LIGHT BUT BRIEF STRONG GUSTS POSSIBLE IN CUMULUS DEVELOPMENT...LATE TODAY AND SAT.

2. FOR THIS AFTERNOON AND EVENING....
   A. WEATHER...PARTLY CLOUDY. SOME TOWERING CUMULUS AND SLIGHT CHANCE OF A THUNDERSHOWER...LATE AFTERNOON INTO EVENING.
   B. CWR... 10 PCT.
   C. TEMPERATURE.. PEAKING IN 75 TO 85 RANGE...
   D. HUMIDITY...LOW 30 TO 25 PCT.
   E. WIND..EYE LEVEL...NW TO NE2 TO 5...SW TO NW 10 TO 15 EXPOSED AREAS. CHANCE OF GUSTS 30 TO 35..IF TOWERING CUMULUS IN AREA.

3. TONIGHT...
   A. WEATHER..PARTLY CLOUDY WITH THREAT OF THUNDERSTORMS ENDING AND CHANCE OF.. ISOLATED RAIN SHOWER.
   B. CWR... 10 PCT
   C. TEMPERATURE...COOLING INTO 40S
   D. HUMIDITY...MAXIMUM 80 PCT...60 TO 65 ON SLOPES/RIDGES
   E. WIND..EYE LEVEL...VARIABLE 2 TO 8 MPH...SW 15 ACROSS RIDGES.

4. OUTLOOK FOR SATURDAY.....WARM AND DRY WITH OCCASIONAL CLOUDINESS. CHANCE OF AN AFTERNOON THUNDERSHOWER. HUMIDITY LIKELY LITTLE CHANGE. WINDS S TO W 10 TO 15 EXPOSED AREAS AFTERNOON.

BENCHMARK RAWS 8/12/88

TIME	READING
1546 1546 1546 0246-0746	MAX. TEMP. 80° MIN. R/H 25% MIN. 1 HR. 5% MAX. R/H 100%

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
1335	3-8 MPH S GUSTS TO 10	.1	

Burning out around Grouse Creek. D. Bunnell Photo

8/13/88 Saturday

Gorman, Smith, Weber, Casey, Kamrud, Bunnell, and Carlson meet to review the contingency plan for Gates Park. Casey recommends and Gorman approves the following actions:

1. They will use wet line and explosives in the head of Route Creek to retard the fire from making a major run up Route Creek and exiting the Wilderness boundary. A secondary line will be constructed in the Nine Mile Park area.

2. They will halt the spread of the fire south into Grouse Creek by burning out a line from Beartop to the North Fork of the Sun. If fire conditions change, they will consider using a direct line and cold trail.

The team prepares a tactical plan for direct attack in Route Creek and burn-out for Biggs Creek. Bunnell orders Wally Bennett of the Flathead National Forest as Operations Chief and a fixed wing patrol flight for Rick Carlson. He also orders a blasting crew, 10,000 feet of water gel explosives, an additional helicopter, and a Mark III aerial ignition dispenser along with 10,000 balls and an operator.

SPOT FORECAST FOR..GATES FIRE 11 AM MDT SATURDAY AUGUST 13, 1988

1. DISCUSSION: WARM SOUTHWEST FLOW ALOFT AHEAD OF AN UPPER AIR TROUGH OFF THE OREGON COAST. AIR ALOFT IS UNSTABLE FOR SOME BUILDING CLOUDS THIS AFTERNOON BUT NOT AS MANY THUNDERSTORMS AS YESTERDAY. UPPER AIR TROUGH COMING ASHORE SUNDAY SO MORE ACTIVE THUNDERSTORMS SUNDAY AFTERNOON AND EVENING.

2. FOR THIS AFTERNOON AND TONIGHT..
   A. WEATHER...PARTLY CLOUDY...ISOLATED THUNDERSTORMS LATE AFTERNOON/EVENING.
   B. CWR...BELOW 20 PCT
   C. TEMPERATURE.. 5400 FT HIGH 83 LOW 45 8000 FT HIGH 76 LOW 49
   D. HUMIDITY... 5400 FT LOW 27% HIGH 99% 8000 FT LOW 29% HIGH 60%
   E. WIND..EYE LEVEL...LIGHT AND VARIABLE 3 TO 12 MPH

3. FOR THE SUNDAY.....
   A. WEATHER...PARTLY CLOUDY..SCATTERED LATE AFTERNOON THUNDERSTORMS
   B. CWR... 30 PCT
   C. TEMPERATURE...5400 FT 82 8000 FT 73
   D. HUMIDITY... 5400 FT 28% 8000 FT 32%
   E. WIND..EYE LEVEL... SOUTHERLY 7 TO 14 MPH SHIFTING WEST 10 TO 15 LATE IN THE EVENING.

4. OUTLOOK...INSTABILITY ENDING MONDAY...WARM AND DRY WITH LIGHT WINDS TUESDAY INTO MIDWEEK.

Light rain falls off and on over the area in the afternoon.

Supervisor Gorman and Kamrud fly Congressman Marlenee over the Bob Marshall Wilderness Complex fires and brief him on the fire management plan and the use of prescribed fire as a wilderness tool.

BENCHMARK RAWS 8/13/88

TIME	READING
1346	MAX. TEMP. 73°
1346	MIN. R/H 29%
1246-1446	MIN. 1 HR. 8%
0546	MAX. R/H 98%

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
0930	55°	83%	16%	CALM	.41 RAIN FROM PREVIOUS EVENING

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
0910	5-8 MPH NW	.1	.23" RAIN FROM PREVIOUS EVENING
1400	CALM	.5	.01" RAIN

GATES PARK UNPLANNED IGNITION PRESCRIBED FIRE
August 13, 1988

Contingency Plan

1. Map of fire perimeter with behavior and size indicated is included.

   The fire is now in an approachable position from an intensity and logistical standpoint. Recent moisture has reduced smoke production and allowed for extensive recon. It is predicted that the risk of direct action on the head of the fire is acceptable under predicted weather conditions. The opportunity now exists to directly influence small segments of the fire perimeter in an effort to retard the growth over time of fire fronts threatening the wilderness boundary. Considerable efforts will be made to be sensitive to wilderness values during all direct actions taken. Sawing will be limited and excessive line development will not occur. The use of extensive wet line and hotspotting will dominate the reinforcement of physical line construction throughout.

2. 428 chains of line to be completed with intermittent fireline explosives and cold trailing by 1800 on 8/15/88.

   General Strategy

   Actions

   Develop a holding line using natural features from Beartop Lookout south to the confluence of Biggs Creek. Use this stream channel as the line, in a southwesterly direction, to the confluence with the Sun River. Reposition Rock Creek hose and pump cache to this area and deploy in preparation for burn out.

   a. *Division Breakdown*

   Biggs Creek

   There is a high potential for fire to exceed the wilderness boundary to the south and east of the Biggs Creek drainage. Fuel and topography features strongly indicate that spotting from the existing fire could produce significant spread rates into the Grouse Creek area.

   Base of the fire is currently stationary in a position of the confluence of Biggs Creek and the North Fork Sun River. The fire has consistently backed south, through the Biggs Flat area into a prevailing southwesterly air flow. Monitor weather and fuel characteristics from Gates Park and Beartop stations on a daily basis. When, and if, the existing fuel bed and wind conditions allow, a strategically controlled burnout operation will be executed in the unburned area north of Biggs Creek.

   The burnout plan will be guided, in general, by the following conditions of prescription. It is projected that this burnout effort will be conducted through the use of the PRIMO MARK III sphere dispenser and helicopter. This aerial ignition device will provide adequate fire source to the ground for successful burnout under the following generalized parameters; fire fuel moisture <10% 10-hour fuel 12-14%, relative humidity <40% and wind speed 0-12 MPH from the prevail-

ing direction of south. Wind gusts of 15 MPH are acceptable if all other parameters are within limits and the spotting potential is at 50% or below.

The Beartop Lookout will be removed prior to ignition and the structure safeguarded by fuel removal and blanketing with reflective shields. If possible, water drops to the roof area will be made as an added precaution. The ignition sequence will start just below the Lookout at the confluence of the ridge and the existing burned area. The method intended is strip head firing from this point south and west, at the discretion of the firing boss, to the confluence of Biggs Creek and the Sun River.

During burnout a crew will be positioned south of Biggs Creek to hot spot, supported by the pump/hoselay deployed south of the creek. Helicopter and bucket will add long-range support and will be a requirement to reduce perimeter hot spots for a two-day period. It is intended that all spots developing south of the Biggs Creek burnout be retarded from spreading.

Cost Estimate

16 hours @ $2.00 =	$3200
Six persons @ $100 =	600
Explosives $1/ft x 550	550
Spheres .08 x 6.00 =	500
Pack Out - Gear Retrieval =	1000
	$5850

Probability: This action is estimated to provide a 75% chance of success that the original prescription will be maintained and that the Gates Park Fire will not exceed the wilderness boundary in the Biggs and Grouse Creek areas. It provides for the protection to the observation line to the south.

Route Creek Area

There is a strong potential for Route Creek drainage to exhibit fire behavior similar to that experienced in Ray Creek on July 28. In that instance, the fire made a strong movement to the east, reaching the Wilderness boundary, a distance of approximately 4.5 miles in four hours (a rate of spread of approximately 90 chains per hour). Spotting occurred 3/4 mile east of the wilderness boundary. This can be expected to occur in Route Creek under the following weather conditions: relative humidities of less than 20%, wind speeds in excess of 9 MPH from the west/southwest, temperatures of more than 80 degrees Fahrenheit. The Headquarters Creek Run of 7/31, further substantiates this projection.

This fire is presently established in the mouth of Route Creek. If the above conditions are met, the complete burning of the drainage is likely to occur.

Spotting ahead of the fire can be expected to occur. If a convection column builds to a vertical height experienced during the Ray Creek Run, then spotting can be expected in areas outside the wilderness in the head of the Middle Fork of the Teton and Waldron Creek drainages.

The current fire front, consisting of approximately 5.5 miles of irregular spotting, stretches from just north of the Ray Creek and Sun River confluence with the Sun River, Lick Creek and Wrong Creek and west of the Sun River drainage on a short ridge where Rabbit Butte Ridge intersects with the conflu-

ence of these drainages. The perimeter growth of the head and flanking actions of the fire have been retarded by showers on the evening 8/12 and 8/13.

Actions

Construct intermittent line, by the use of explosives, from the Rabbit Butte Ridge east to the fire front north of Route Creek and then south to the main burnout area of Ray Creek. Where actual line is not appropriate or cold line is possible, line development will not occur. Limited sawing and clearing methods will dominate this construction effort.

The line development will be reinforced by three water developments and aerial bucket operations. The intent is to retard the intensity of this entire area which lies at the base of all four drainages, like the hub of a four-spoked wheel.

Long-term effects of this proposal are intended to reduce the intensity and delay the timing and direction of entry of the fire front up the mouth of Route Creek. The topographic features of Route Creek strongly indicate that protection of the wilderness boundary be considered at the base of this drainage.

Cost Estimate

Category I Crew @ $3000/day =	$9000
Blasting crew 6 @ $100/day x 2 =	1200
212 Helicopter 4 hrs @ $1700/hr =	6800
206B Helicopter 32 hrs @ 200/hr =	6400
Explosives $1/ft x 10,000 ft =	10,000
Camp expense - food/cook =	4000
Pack out - Retrieval (gear) =	3000
	$40,400

Probability

This action is projected to provide a significant delay of fire entering the mouth of Route Creek on a unified front. This delay reduces the threat of fire escaping the wilderness boundary from the east ridge above Route Creek during the near future. From this standpoint, this effort reduces the threat of escapement by 50% for the duration of the fire.

Fire Situation Assessment

Recent rain and predicted showers over the next 48 hours enhance the potential success of planned actions in the Route Creek area. It should be anticipated that heavy water support from helicopter and ground sources will effectively cool down the critical areas at the bottom of Route, Lick and Wrong Creeks. This should significantly increase the probability of the fire going in a more northerly direction and being forced to enter Route Creek over Wapiti Ridge at a much later date than has previously been projected. Seasonal timing increases the chances of this strategy retarding the growth of the fire up Route Creek. Each day of continuing summer season will be shorter and the evenings will infringe on the burning period by lower temperatures and rapidly increasing humidities. This fire has been a late afternoon and evening developer, so time is important to future growth projections.

The recent moisture does not enhance the burnout opportunities in Biggs Creek. The fire is now in perfect alignment with natural features for an effective burnout. We project that fuel conditions may not be valid under the prescription for 3-to-5 days, and the prevailing winds experienced the last two days may not coincide with diminishing fuel moisture. Both fuel moisture and wild speed and direction are keys to the success of this section.

3. Resistance to control: High (Fuel Model G).

4. Camps, water sources, helispots, access areas; ID on map.

5. Required manpower to contain: Route Creek area: Helicopter, camp at Wrong Creek, crew and six people working pumps for a three-day period. Biggs Creek: Helicopter, pump and six people holding for two days.

6. Constraints to suppression effort: Normal wilderness constraints.

7. Facilities ahead of fire: Gates Park Guard Station, Wrong Creek Guard Station, Cabin Creek Guard Station, packbridge across North Fork of the Sun River, outfitter camps.

8. *Facility Protection*

Gates Park Building - A Mark III pump and hoselay is setup around the facility using Gates Creek as a water source. In addition, a fire shelter has been deployed over the Gates Park roof to protect the structure from fire brands. All combustible fuels (vegetation) around buildings has been removed and a strip around the facility has been burned out to prevent fire spread.

Personnel assigned to Gates Park have fire shelters, are knowledgeable of escape routes and are monitored by Beartop Lookout.

Beartop Lookout - The Lookout can be removed by helicopter. If necessary, the Lookout can move to an escape route and deploy a fire shelter. The Lookout is generally fire secure since it is located on a rock ridge.

Bridge Protection - A Mark III pump, hose lay and sprinkler system has been set up on the packbridge for the duration of the fire.

Wrong Creek Cabin - A Mark III with hoselay is set up around the cabin using Wrong Creek as a water source. A fire shelter has been deployed over the cabin roof to protect the structure from fire brands. All combustible fuels around the cabin have been removed.

Cabin Creek Cabin - A pump and hoselay would be set up around the cabin. A fire shelter would be deployed over the cabin's roof. Vegetation would be removed from the vicinity of the cabin.

Outfitter Camps - No action has been taken to protect outfitter camps at this point. However, if limited action can be taken to protect a camp, it will be done.

9. Watershed Protection - The North Fork of the Sun River is a major drainage of Gibson Reservoir. The Irrigation District has expressed concern that the fire's size be limited to a set acreage to prevent heavy runoffs and increased sedimentation.

   The Forest hydrologist has calculated that 34,000 acres would represent a 5% water yield increase for the North Fork Sun River.

Prepared by: /s/_____
David Bunnell, Tactical Team Leader

/s/_____
Rick Carlson, Fire Behavior Analysis

Gates Park under seige. D. Bunnell

8/14/88 Sunday

Smith, Kamrud, Love, Stiger, Bunnell and Carlson meet with Walt Tomascak, Regional Fire Use Specialist, to review the contingency plan. The team begins implementation of the Route Creek portion of contingency plan by developing helispots at the mouth of Route Creek and Wrong Creek along the North Fork of the Sun River. Because of the previous days rain and low fire activity, the helicopter is able to start ferrying the crew and explosives at 0830. Bunnell orders a Type I crew and organizes the 8 person District crew with all the District's water handling equipment. Bunnell ground truths aerial photos in Route and Biggs Creek areas. Wally Bennett takes over as Operations Chief and helps prepare spike camp plans for Wrong Creek Cabin area. There is very little fire activity.

WEATHER FROM GATES PARK

TIME	*TEMP.*	*R/H*	*FFM*	*WIND*	*REMARKS*
0810 1440	50° 75°	82% 29%	15% 8%	calm 0-3 W	.3 high thin .5 cloud cover

SPOT FORECAST FOR..GATES PARK 1615 MDT SUNDAY AUG 14 1988

1. DISCUSSION: A RELATIVE WARM AIR MASS IS OVER US...LESS MOISTURE IS AROUND TODAY THAN YESTERDAY, HOWEVER, SO LESS CONVECTIVE ACTIVITY WILL BE AROUND THIS EVENING, AFTER MONDAY CONVECTIVE ACTIVITY WILL INCREASE AGAIN AS A WEATHER SYSTEM COMES IN FROM THE PACIFIC NORTHWEST.

2. FOR TONIGHT
   A. WEATHER... CLEARING AFTER A 10% CHANCE OF EVENING THUNDERSTORMS.
   B. CWR... LESS THAN 10 %
   C. TEMPERATURE.. MIN 42-48
   D. HUMIDITY... MAX 70-75%
   E. WIND EYE LEVEL..GENERALLY DOWN SLOPE 0-3 MPH. RIDGES WESTERLY 3-8 MPH.

3. FOR MONDAY...
   A. WEATHER... PARTLY CLOUDY. 20% CHANCE OF AFTERNOON THUNDERSTORMS.
   B. CWR... LESS THAN 10%
   C. TEMPERATURE... MAX 76-80
   D. HUMIDITY... MIN 25-30%
   E. WIND..EYE LEVEL... MOSTLY UPSLOPE..3-6 MPH RIDGES WESTERLY 5-10 MPH.

4. OUTLOOK FOR MONDAY NIGHT...LITTLE CHANGE FROM TONIGHT.

BENCHMARK RAWS 8/14/88

TIME	READING
1446,1646-1746	MAX. TEMP. 75°
1746	MIN. R/H 20%
1746	MIN. 1 HR. 4%
0746	MAX. R/H 93%

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
1420	10-15 MPH W-SW	.5	

8/14/88 After the smoke clears from the rain - Gates Creek.

8/15/88 Monday

Gorman and Smith meet with the Regional Forester John Mumma and his staff. and are assured of their full support and commitment in managing the Canyon Creek and Gates Park Prescribed Fires. If we run out of funds and have to go to wildfire status, Mumma wants to be involved in the decision. If the fire leaves the Wilderness, we should take all necessary actions to suppress it.

Gorman and Smith meet with the Canyon Creek Analysis Team and review the status and the contingency plan for the Gates Park Fire.

SPOT FORECAST FOR..GATES PARK 1150 MDT MON AUG 15 1988

1. DISCUSSION: A WEATHER SYSTEM IS MOVING NORTH TOWARDS MONTANA TODAY, BUT WILL LIKELY HAVE LITTLE INFLUENCE ON THE FIRE AREA TODAY. ANOTHER SYSTEM WILL COME OUT OF THE PACIFIC NORTHWEST TOMORROW, AND THIS IS MORE LIKELY TO CAUSE THUNDERSTORMS IN THE AREA.

2. FOR THIS AFTERNOON...
   A. WEATHER... MOSTLY SUNNY. 10% CHANCE OF THUNDERSTORMS DEVELOPING NEARBY.
   B. CWR... LESS THAN 10 %
   C. TEMPERATURE.. MAX 78-82
   D. HUMIDITY... MIN NEAR 30%
   E. WIND..EYE LEVEL... SOUTHWEST 8-12 MPH

3. FOR TONIGHT...
   A. WEATHER... FAIR. 20% CHANCE OF EVENING THUNDERSTORMS IN THE AREA.
   B. CWR... LESS THAN 10%
   C. TEMPERATURE... MIN 42-46
   D. HUMIDITY... RECOVERY GOOD ... MAX NEAR 80%
   E. WIND..EYE LEVEL... SOUTHWEST 5-10 MPH

4. OUTLOOK FOR TUESDAY...PARTLY CLOUDY AND BREEZY AT TIMES...CHANCE OF SHOWERS OR THUNDERSTORMS. TEMPS DOWN ABOUT 3 DEGREES AND RH UP ABOUT 5%. WINDS STILL WESTERLY.

Blasting team (headed up by Larry Eisenman) starts to shoot line around isolated spots on the ridge that commands the high ground above the mouth of Route Creek. It is slow going with lots of short shots. The Bitterroot IH crew and half of District force is ferried by helicopter into the mouth of Ray Creek to begin development of a hand line and cold trailing the fire north to Frazier Creek. Mel Kerbs takes over the management of the spike camp at the Wrong Creek Cabin.

Fire activity increases, with the area 1 mile south-southwest of Rabbit Butte especially active, until clouds, scattered light rain, and lightning move into area in late afternoon. Heavier rains fall in the early evening with Gates Park recording .41 inches overnight and Beartop Lookout .11 inches.

BRIEFING FROM CHUCK BUSHY, FBA RICO...AUGUST 15, 1988.

We can anticipate an active burning day with dryer and warmer weather projected for the next two to three days.

Winds will be out of the southwest.

The number of days we can expect weather conditions similar to those experienced during the Ray Creek and Headquarters Creek events is 7 - 10 days over the 1 1/2 months (i.e., temperatures greater than 80° and relative humidity less than 20%).

Average surface winds are projected to be at 9 mph along the ridges and 9-12 mph at the surface. We will occasionally experience winds at 20-30 mph resulting from lower level jets.

We can anticipate three days when the winds will exceed 15 mph.

During years of extreme dry conditions, the chance of intensive burning condition will diminish substantially after September 11.

During "normal" years we would expect 1.0 inches of precipitation with 15 days of cloudy weather and a killing frost around August 21.

WEATHER FROM GATES PARK

TIME	*TEMP.*	*R/H*	*FFM*	*WIND*	*REMARKS*
0930 1725	52° 77°	82% 25%	15% 6%	0-3 N 4-8 E	clear thunder-heads building

BENCHMARK RAWS 8/15/88

TIME	READING
1246,1546 1146 1346-1546 0746	MAX. TEMP. 78° MIN. R/H 23% MIN. 1 HR. 4% MAX. R/H 79%

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
1400	5-10 MPH NE GUSTS TO 15 MPH	.1	

The fire is estimated to have increased in size by roughly 3000 acres since August 9th. The increase is primarily on a broad front toward the west and in Biggs Flat. The fire is now 20,798 acres with about 1900 acres unburned in the Gates Park area.

8/16/88 Tuesday

SPOT FORECAST FOR..GATES PARK 1000 MDT TUE AUG 16 1988

1. DISCUSSION: HIGH PRESSURE WILL REBUILD OVER AREA DURING THE NEXT FEW DAYS FOR WARM & DRY WEATHER. STRONG GUSTY WINDS TODAY DECREASING TONIGHT.

2. FOR THIS AFTERNOON...
   A. WEATHER.. MOSTLY SUNNY. LESS THAN A 10% CHANCE OF THUNDERSTORMS.
   B. CWR...VIRTUALLY ZERO
   C. TEMPERATURE... A LITTLE COOLER..MAXS 67-72
   D. HUMIDITY... MIN NEAR 25%
   E. WIND.EYE LEVEL WEST-SOUTHWEST 10-20 MPH EXPOSED AREAS GUSTS 30 MPH

3. FOR TONIGHT...
   A. WEATHER... GENERALLY CLEAR.
   B. CWR... ZERO
   C. TEMPERATURE... MIN NEAR 45
   D. HUMIDITY... RECOVERY GOOD...MAX NEAR 80
   E. WIND..EYE LEVEL... WEST TO SOUTHWEST DECREASING TO 5-10 MPH

4. OUTLOOK FOR WEDNESDAY...SUNNY AND WARMER..TEMPS UP 5 DEGREES RH DOWN 5%..WINDS W 8-12 MPH

Thirty-two people are now involved in developing the containment line in the Route Creek area. Mop-up starts at the back-end of the shot line as the line progresses across the North Fork of the Sun River to the mouth of Route Creek. Helicopter bucketing supports the squad hot spotting north of Route Creek. One helicopter is committed to leap frog explosives for blasting boss Eisenman. By the end of the day they will have blasted over a mile of line west to east and cold trailed and hot spotted another 2 1/2 miles of line from Ray Creek north. Carlson finalizes field exam for a possible secondary line up Route Creek. Bennett brings rest of the crew from Wrong Creek to reinforce critical segments of line in Route Creek.

There is very little fire activity overall.

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
0925 1517	49° 70°	87% 30%		calm 6-10 S	foggy with clear skies

BENCHMARK RAWS 8/16/88

TIME	READING
1746-1846	MAX. TEMP. 74°
1646-1846	MIN. R/H 27%
1646-1846	MIN 1 HR 6%
0446-0746	MAX R/H 100%

BEARTOP LOOKOUT

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
1400	2-8 MPH W	.3	.11 RAIN

The fire perimeter remains at 20,798 acres.

Mopping up. K. Westly Photo

8/17/88 Wednesday

SPOT FORECAST FOR..GATES PARK 11 AM MDT WEDNESDAY AUGUST 17, 1988

1. DISCUSSION: WARM WITH SOME HIGH CLOUDS TODAY. WEAK PACIFIC WEATHER MOVING THROUGH THURSDAY. THE FRONT WILL BE FAIRLY WEAK WITH ONLY SOME CLOUDS...BUT WILL BRING SOME WESTERLY WINDS THURSDAY.

2. FOR TONIGHT....
   A. WEATHER... CLEAR TO SOME HIGH CLOUDINESS
   B. CWR...BELOW 10 PCT
   C. TEMPERATURE.. LOW 43
   D. HUMIDITY... HUMIDITY RECOVERY ABOVE 70 PCT
   E. WIND..EYE LEVEL...LIGHT SOUTHEAST TO EAST..5 TO 12 MPH...

3. FOR THURSDAY.....
   A. WEATHER... PARTLY CLOUDY
   B. CWR... BELOW 10 PCT
   C. TEMPERATURE... 5000 FT 84 8000 FT 63
   D. HUMIDITY... 5000 FT 19 PCT 8000 FT 40 PCT
   E. WIND..EYE LEVEL...SOUTHERLY MORNING 5 TO 12 MPH SHIFTING TO WEST TO NORTHWEST 10 TO 20 MPH AFTERNOON AND EVENING

4. OUTLOOK FRIDAY..PARTLY CLOUDY AND COOLER WITH NORTH WINDS 5 TO 15 MPH.

There is little fire activity all day. Hotline construction continues in Route Creek to met up with crew coming from Ray Creek. In the morning, Eisenman blasts secondary line in Route Creek with Bennett's main group from Wrong Creek. One helicopter works bucket drops, while the other moves Eisenman, crew and explosives to Biggs Flats in the afternoon to complete the blasting. All together they shoot and cold trail (with the help of a rain shower) almost 6 miles of line. Extensive use of wet surface soil and bladder bags with water bug pumps, makes this their most productive day so far. The 4th edition of "Up Front" is distributed to Fairfield, Choteau, Augusta, Fort Shaw, Sun River, Vaughn, and Bowmans Corner. The newsletter explains the prescribed fire policy, air quality, and watershed effects.

BENCHMARK RAWS 8/17/88

TIME	READING
1546	MAX TEMP. 79°
1546	MIN R/H 26%
1446-1646	MIN 1 HR 6%
0446-0746	MAX R/H 100%

WEATHER FROM GATES PARK

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
0800	45°	80%	15%	CALM	.2 CLOUD COVER
1400	78°	28%	5%	4-8 SOUTH	.4 CLOUD COVER

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
1400	5-10 MPH S	50%	

The fire perimeter remains at about 20,800 acres.

8/17/88 Activity along western perimeter. W. Jaeger, Jr. Photo

REGIONAL INCIDENT COORDINATION ORGANIZATION
FIRE BEHAVIOR SERVICE CENTER
Northern Region, Missoula, Montana

Introduction

The fire-danger across the *ENTIRE* Region is *EXTREME*, and has been so since July 27th. This means that the energy release component (ERC) used as a fire-danger rating from key AFFIRMS weather stations across the Region have been at or above the 95th percentile. We generally consider the fire-danger to be high when we exceed the 80th percentile ERC level. Parts of our eastern region have been above the 95th percentile for a considerably longer period.

Eastern 1000 hour timelag (1-3 inch diameter fuel) fuel moistures are in the 0-10% range and show the effects of the long-term drought these areas have experienced. This same fuel size-class in the western mountains are in the 10-15% range.

Weather Summary

The general weather pattern this summer has been HOT and DRY. High pressure and southwesterly free air winds have dominated. Afternoon temperatures east of the continental divide are commonly in the 90's and occasionally in the 100's. The mountainous western third of the Region has generally been in the upper 70's to upper 80's range and frequently in the low 90's.

Upper air disturbances passing across the dominating high pressure have been common. These tend to move from the northwest to southeast and usually result in increased cloud cover and stronger winds. Influence from these low pressure troughs can be expected to occur every 3 to 5 days.

Afternoon thunderstorm buildup with high potential for dry lightning and strong, gusty winds has been common across the entire Region. We have only been receiving very scattered, locally heavy showers. Most showers result only in enough rain to wet your hardhat.

Fuel Moisture and Fire Behavior by General Fuel Types

EASTERN SAGEBRUSH/GRASS AND PONDEROSA PINE FUEL TYPES - Afternoon lows of 2-3% 1 hr and 3-6% 10 hr fuel are common, night time recovery has been very poor. Active burning through the night. Crowning and spotting in stands of dense ponderosa is regular occurrance. Very rapid rate-of-spread even with light winds. Sage/grass plateaus sometimes seem to explode the spread is so rapid. Probability of ignition 90-100% during the day, 50-60% at night.

CENTRAL AND WESTERN MONTANA FORESTS/GRASSLANDS - Afternoon lows of 4-6% 1 hr and 7-10% hr fuel. Night relative humidity recovery has been moderate with 1 hr fuel moisture rising into the upper teens, low 20's; 10 hr fuel into the mid-teens. Active underburning with occasional crowning during the night and morning. Afternoon winds rapidly increase crowning and long distance spotting. Probability of ignition typically 90% during the day and 30% at night.

CENTRAL AND NORTHERN IDAHO FORESTS/GRASSLANDS - Afternoon lows of 5-7% and 9-12% 10 hr fuel moistures. Night relative humidity recovery has been moderate to good at most stations, pushing both the 1 hr and 10 hr values to the mid-teens and mid-20's, but drying trend continues. Thermal belt conditions have occurred at night. Fires difficult to control because of dry, heavy fuels. Crowning and spotting common during day, underburning at night. Probability of ignition about 50-60% during the day, 5-20% at night.

--Chuck Bushey, 329-4850 (FTS584), RICOPLANS:R01D, 8/16/88

GATES PARK

FIRING PLAN

8/17/88

GATES PARK FIRING PLAN

Rx Parameters

1. */Temperature and Fuel moisture*: The following matrix provides the allowable Temperature/1 Hr. fuel moisture combinations by showing the resultant percent probability of a fire brand igniting a new fire outside the burnout area. The probability of ignition will not exceed 50%

Fuel Moisture 1 Hr.

Temp	6	8	10
60	50%	40%	30%
70	50%	40%	30%
80	60%	40%	30%
90	60%	40%	30%

2. */Humidity*: The humidity cannot exceed 55% during the projected burnout period.

3. */Wind*: Based on calculated spotting distances the following are the maximum allowable wind values by direction:

Lynx Cr. Potion:

Direction	Max. Windspeed
N	<10
N.E.	<10
E	<10 with occasional gusts to 15
S.E.	<12 with gusts to 15
S	<10
S.W.	<10
W	<8
N.W.	<5

Biggs Flat Portion:

Direction	Max. Windspeed
N	<2
N.E.	<2
E	<2
S.E.	<5
S	<10
S.W.	<5
W	<2
N.W.	<2

IGNITION:

Ignition for both areas will occur in late afternoon or evening after an acceptable spot weather forecast, and temperature and humidity curves are favorably established. Ignition will be accomplished by aerial ignition utilizing the Primo Mark III plastic sphere dispenser. The ignition pattern will generally follow that as shown on the plan map, but may be modified by the ignition boss as fire behavior and/or weather changes dictate. The ignition boss will fly in the helicopter to direct the firing.

HOLDING:

A second helicopter with a bucket will be prepositioned as shown on the map to suppress any spot fires that may develop. A pump with a hoselay as shown on the map will be established. A minimum of a 6 person crew equipped with handtools and a chainsaw will be positioned at the helispot for rapid deployment.

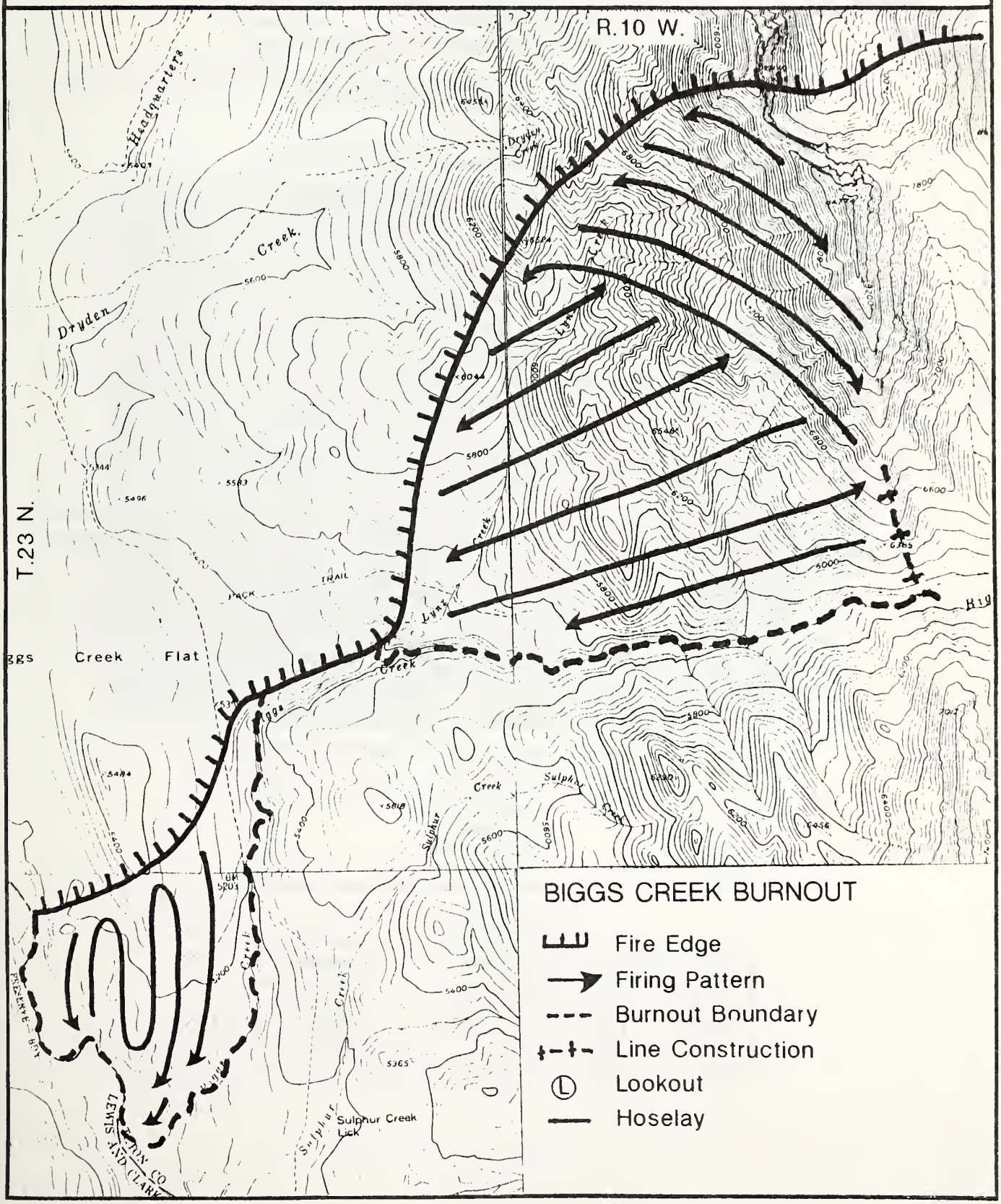
SAFETY:

All personnel will be appropriately carded. A safety briefing will be held prior to ignition with all personnel present. Beartop Lookout will be evacuated and wet down with at least two buckets of water prior to ignition.

COST PROJECTION

1.	HELICOPTERS:		
	01K @ $425/HR X 3 HRS	=	$1275
	129 @ $200/HR X 9 HRS	=	$1800
2.	PERSONNEL:		
	6 Crewpersons @ $10/Hr. x 36 Hr.	=	$2160
	2 Overhead @ $129 Ea. x 2	=	$258
	4 Helicopter Support @ $10/Hr. x 12 Hrs.	=	$480
3.	EQUIPMENT:		
	8000 Ignition Spheres @ .17 Ea.	=	$1240
			$7213

MAP 12 Gates Park Firing Plan



8/18/88 Thursday

SPOT FORECAST FOR..GATES PARK 11AM MDT THURSDAY AUGUST 18, 1988

1. DISCUSSION: A PACIFIC WEATHER FRONT MOVED EAST THROUGH AREA BEFORE DAWN. HIGH PRESSURE MOVING IN BEHIND FRONT SHOULD BRING GUSTY WINDS TODAY.

2. FOR LATE TODAY AND TONIGHT....RED FLAG WARNING FOR WINDS...
   A. WEATHER...PARTLY CLOUDY..ISOLATED SHOWERS NORTH OF FIRE AREA.
   B. CWR... 10 PCT
   C. TEMPERATURE HIGH 5000 FT 67 LOW TONIGHT 34 8000 FT HIGH 50 LOW 36
   D. HUMIDITY...LOWEST 5000 FT 34 PCT RECOVERY TONIGHT TO 90 PCT. LOWEST 8000 FT 20 PCT RECOVERY TONIGHT TO 60 PCT.
   E. WIND..EYE LEVEL... SOUTHWEST TO WEST 15 TO 25 MPH (RIDGE 35 TO 40) DECREASING TONIGHT TO NORTHWEST 5 TO 15 MPH (RIDGE 15 TO 25 MPH.)

3. FOR FRIDAY....
   A. WEATHER...SUNNY TO PARTLY CLOUDY
   B. CWR BELOW 10 PCT
   C. TEMPERATURE...HIGH 5000 FT 75 800O FT 65
   D. HUMIDITY... LOWEST 5000 FT 28 PCT 8000 FT 25 PCT
   E. WIND..EYE LEVEL...NORTHWEST 5 TO 15 MPH AFTERNOON RIDGE N/W 15 MPH

4. OUTLOOK FOR SATURDAY....NEXT WEATHER FRONT COMING IN FROM THE PACIFIC BRINGING CLOUDS AND SOUTHWEST WINDS AHEAD OF IT SATURDAY 15 TO 30 MPH.

Helicopter bucket work continues, using a beaver pond at Wrong Creek. Burnout preparations are now complete for full implementation of 8/13/88 contingency plan. Burn out on Biggs Creek has to be delayed until fuel conditions improve. Contingency plan, dated 8/18/88, specifically requires line decision to implement burn out in Biggs Creek. The Route Creek area continues to react as predicted. Projection maps are finalized. Due to high fuel moisture, fire inactivity and multiple starts on the Flathead, the team is temporarily disbanded with a caution to the Forest to closely monitor the expected fuel drying process. There is sporadic fire activity in mid afternoon southwest of Rabbit Butte, but low activity elsewhere.

BENCHMARK RAWS 8/18/88

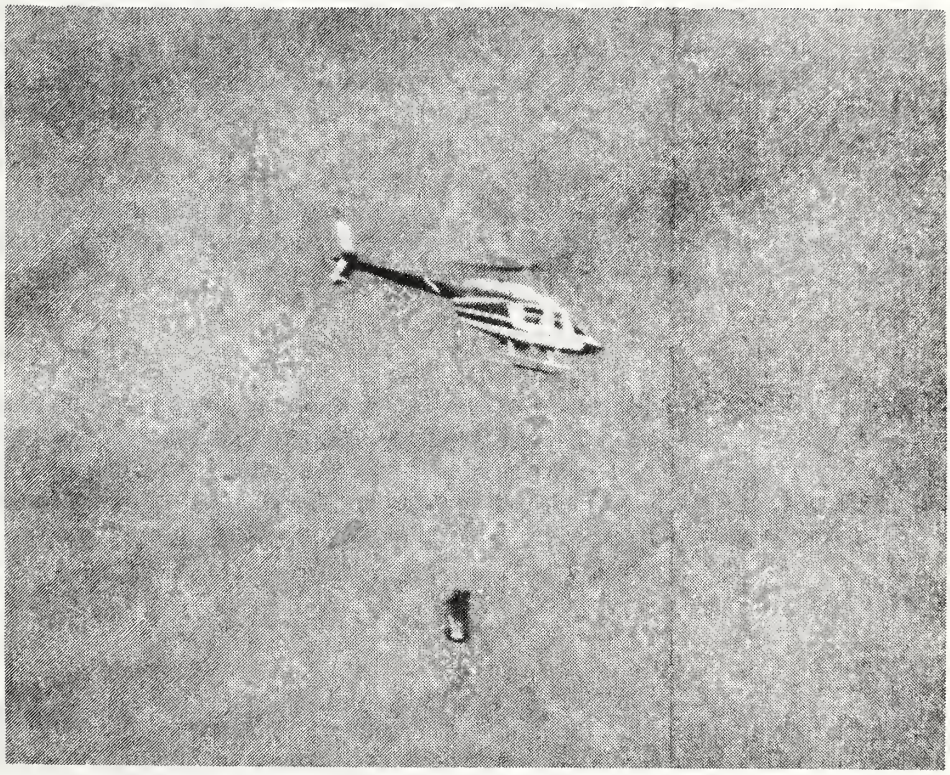
TIME	READING
1546 - 1646	MAX TEMP 73°
1646	MIN R/H 23%
1446 - 1846	MIN 1 HR 5%
0746	MAX R/H 94%

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
0820	49°	75%	14%	CALM	CLEAR
1415	70°	33%	6%	4-8 WEST	MOSTLY CLEAR

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
1400	5-12 MPH SW	.2	



Helicopter taking supplies into Gates Park. W. Jaeger, Jr. Photo

GATES PARK UNPLANNED IGNITION PRESCRIBED FIRE
August 18, 1988

Contingency Plan

1. Map of fire perimeter with behavior and size indicated is included.

   As anticipated, the fire has maintained it's approximate position since the last mapping on 8-13-88. Several showers have affected the fire over the period with a high of 41 hundredths reported at the Gates Park station on 8-14. Total measured precipitation for the period has been 62 hundredths at Gates Park and 33 hundredths at Beartop Lookout. The north (head) of the fire in the Route Creek area has received significantly less moisture, as has all of the west flank from Rock Creek north through the Lick Creek drainage. Minimal spotting has occurred in the northwest sections and the increase in size of the total perimeter is estimated to be less than 100 acres.

2. Roughly 6.4 miles of perimeter has been developed or worked. Significant line has been developed by the use of 20,000 feet of fireline explosives. Longer segments have been hot spotted, cold trailed and wet lines by backpack and water bag pumps/hoselays in the hotter areas.

General Strategy

Maintain constant surveillance of the critical fire area from Beartop Lookout and periodic air and ground patrol. Maintain District forces at Gates Park and Wrong Creek Cabin to monitor and hotspot in critical areas on north and southeast flanks. Reduce intensity levels to limit spotting and attack all spots north of Route Creek and east Briggs Creek by hand tool and bucket drops where needed. Assess need to implement burnout plan over the course of the continuing action. This is a line decision.

a. *Division Breakdown*

Biggs Creek Area

The Biggs Creek area has received the bulk of the measured precipitation and the effect has been a consistent reduction of fire intensity on the southeast flank of the fire. The short section of line (800 ft.) has been blown from the toe of the Beartop ridge to Biggs Creek, but has not been cleaned and some saw work will be required in a doghair thicket where the line intersects with the creek. This work must be accomplished to make this a line that is safe to backfire from successfully.

The southern most area of the fire between the confluence of Biggs Creek and the main Sun drainages, continues to be quite active. This area will always be a threat to spot or run east across Biggs Creek and circumvent the preventive measures of the proposed burnout. The Stevens outfitter camp at the mouth of Lynx Creek has been inspected and remains essentially intact. It appears to be in a defensible position from the burnout and is a consideration of any plans to introduce or influence fire in this area.

If the burnout of the southeast flank of the fire is selected as a feasible method, the attached burnout plan is a recommended approach. This plan specifies the prescription parameters and defines a strategy for implementation. *NOTE* The prescribed fire monitoring fund must be

closely audited to insure that sufficient funding is available to implement or alter the proposed to a level commensurate with the funding available.*

Route Creek Area

The planned efforts to reduce intensities at the head of the fire have been completed and few visible smokes remain on the perimeter from Rabbit Butte ridge south and east to Ray Creek. Several areas of line construction have been developed with fireline explosives (20,000 ft.) in the Route Creek and Sun River confluence and around the upper end of Frazier Creek. Large and small spots have been lined in all known locations north of a line from Rabbit Butte around the perimeter down to the Ray Creek burned area. Limited bucket operations have been directed on the isolated spots north of the Rabbit Butte ridge line and this area has been cooled down significantly.

Continued sweeping and wet mopping of the established lines is important to reduce continued surface spread. Particular attention should be given to the Spruce pockets that are holding fire due to deep duff depths in excess of 2 feet. Continued sporadic support from helicopter bucket operations will reduce the threat of local spotting from these existing areas.

Action Cost Estimate

As of the close of business on 8-18-88, the above described actions have been estimated at $53,580, expense spreadsheet enclosed. Assuming that four District personnel and helicopter, plus module, will be required to support the effort. The existing available budget will carry this crew and equipment on an estimated 10 to 15 days. This estimate is based on the assumption that the Forest will choose to commit the cheaper of the two helicopters and modules to this project and all personnel wages are charged to this incident.

3. Resistance to control: High (Fuel Model G).

4. Camps, water sources, helispots, access areas; ID on map.

5. Required manpower to contain; Route Creek area: Helicopter, camp at Wrong Creek, crew and six people working pumps for a three-day period. Biggs Creek: Helicopter, pump and six people holding for two days.

6. Constraints to suppression effort: Normal wilderness constraints.

7. Facilities ahead of fire: Gates Park Guard Station, Wrong Creek Guard Station, Cabin Creek Guard Station, packbridge across North Fork of the Sun River, outfitter camps.

8. *Facility Protection*

Gates Park Building - A Mark III pump and hoselay is setup around the facility using Gates Creek as a water source. In addition, a fire shelter has been deployed over the Gates Park roof to protect the structure from fire brands. All combustible fuels (vegetation) around buildings have been removed and a strip around the facility has been burned out to prevent fire spread.

Personnel assigned to Gates Park have fire shelters, are knowledgeable of escape routes and are monitored by Beartop Lookout.

Beartop Lookout - The Lookout can be removed by helicopter. If necessary, the Lookout can move to an escape route and deploy a fire shelter. The Lookout is generally fire secure since it is located on a rock ridge.

Bridge Protection - A Mark III pump, hoselay and sprinkler system has been set up on the packbridge for the duration of the fire.

Wrong Creek Cabin - A Mark III pump with hoselay is set up around the cabin using Wrong Creek as a water source. A fire shelter has been deployed over the cabin roof to protect the structure from fire brands. All combustible fuels around the cabin have been removed.

Cabin Creek Cabin - A pump and hoselay would be set up around the cabin. A fire shelter would be deployed over the cabin's roof. Vegetation would be removed from the vicinity of the cabin.

Outfitter Camps - No action has been taken to protect outfitter camps at this point. However, if limited action can be taken to protect a camp, it will be done.

9. Watershed Protection - The North Fork of the Sun River is a major drainage of Gibson Reservoir. The Irrigation District has expressed concern that the fire's size be limited to a set acreage to prevent heavy runoffs and increased sedimentation.

   The Forest hydrologist has calculated that 34,000 acres would represent a 5% water yield increase for the North Fork Sun River.

Prepared by: /s/_____
David Bunnell, Tactical Team Leader

/s/_____
Rick Carlson, Fire Behavior Consultant

8/19/88 Friday

SPOT FORECAST FOR.. GATES PARK 12:30 MDT FRIDAY AUGUST 19, 1988

1. DISCUSSION: LIGHT WINDS AND HIGH CLOUDS TODAY AHEAD OF A PACIFIC WEATHER FRONT APPROACHING FROM BRITISH COLUMBIA. WEATHER FRONT SHOULD PASS THROUGH THE FIRE AREA SATURDAY MORNING. UNSETTLED WEATHER THIS WEEKEND AND MUCH COOLER ESPECIALLY SUNDAY AND MONDAY.

2. FOR TONIGHT.....
   A. WEATHER...INCREASING CLOUDS...
   B. CWR... 10 PCT
   C. TEMPERATURE..LOW IN THE 40S
   D. HUMIDITY.. RECOVERY ABOVE 70 PCT BOTTOM BUT ONLY 65 PCT TOP
   E. WIND..EYE LEVEL... INCREASING SOUTHWESTERLY 5 TO 15 MPH.

3. FOR SATURDAY.....
   A. WEATHER...VARIABLE CLOUDS...CHANCE SCATTERED SHOWERS
   B. CWR...20 PCT
   C. TEMPERATURE... COOLER 70S BOTTOM AND 65 RIDGE
   D. HUMIDITY... LOWEST 25 TO 35 PCT
   E. WIND..EYE LEVEL SHIFTING WESTERLY 10 TO 20 MPH RIDGE 25 TO 35 MPH.

4. OUTLOOK FOR SUNDAY AND MONDAY.... PARTLY CLOUDY AND A LITTLE UNSETTLED WITH ISOLATED SHOWERS. NORTHWEST WINDS 10 TO 25 MPH. CONTINUED COOLING TEMPERATURES.

Bunnell returns to the Flathead National Forest where they have 43 new fires, two of which are project size. Carlson returns to the Lolo National Forest and Bennett and the Type II crew are dispatched directly to another fire. The Type I crew is returned home to the Bitterroot.

Two District people patrol the line along Route Creek, working on hot spots that appear. There is little change in the Gates Park Fire with most activity along the northwest perimeter.

BENCHMARK RAWS 8/19/88

TIME	READING
1646	MAX TEMP. 79°
1446	MIN R/H 9% (???)
1446-1746	MIN 1 HR 3%
0746	MAX R/H 94%

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
0930	50°	70%	12%	CALM	CLEAR
1640	75°	12%	4%	6-9 G 10-12 W	CLEAR

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
1445	3-7 MPH SW GUSTS TO 10MPH	CLEAR	

8/19/88 Activity on the NW perimeter. Lick Mt. in center Rabbit Butte at right.

8/20/88 Saturday

SPOT FORECAST FOR.. GATES PARK 10:55 MDT SATURDAY AUGUST 20, 1988

1. DISCUSSION: ERRATIC WEATHER PATTERN TODAY WITH UPPER LEVEL DISTURBANCE CROSSING AND STRONG PRESSURE GRADIENT. FRONTAL SYSTEM ALREADY EAST OF AREA. HIGH PRESSURE WILL MOVE INTO AREA TONIGHT AND SUNDAY ROR A LITTLE COOLER AND MORE STABLE WEATHER.

2. FOR THE FIRST BURN PERIOD...TODAY
   A. WEATHER...FEW AFTERNOON CUMULUS BUILDUP..SLIGHT CHANCE DRY LIGHTNING
   B. CWR... ZERO
   C. TEMPERATURE... NEAR 75 BOTTOM AND 65 TOP
   D. HUMIDITY... MIN NEAR 15 PCT...RISING SLOWLY THIS AFTERNOON.
   E. WIND..EYE LEVEL... THROUGH ERRATIC...MOSTLY W TO NW 10 TO 20 WITH SOME GUSTS 35 MPH THROUGH SOME PASSES AND UPPER SLOPES AND RIDGES.

3. FOR THE SECOND BURN PERIOD...TONIGHT
   A. WEATHER...PARTLY CLOUDY...CHANCE OF DRY THUNDERSTORM.
   B. CWR...ZERO
   C. TEMPERATURE... GOOD COOLING. LOW 33 TO 38.
   D. HUMIDITY... RECOVERY TO NEAR 70 PCT.
   E. WIND..EYE LEVEL..N TO NW 3 TO 8..GUSTS TO 25 UPPER SLOPES/RIDGES.

4. OUTLOOK FOR FOLLOWING BURN PERIOD...SUNDAY MOSTLY SUNNY AND MILD. HIGH TEMPERATURES 60 TO 70. HUMIDITY UP...MIN 25 TO 35 PCT. WINDS VARIABLE 5 TO 15... NW TO W 15 TO 20 GUSTY EXPOSED AREAS AFTERNOON.

Strong winds and moderate cloud cover cause an overall increase in fire activity. Two helicopters work with ground crews making bucket drops in Route Creek and Lynx Creek. Monitors observe minor expansion of the perimeter on several fronts. The most activity is along the western perimeter around the headwaters of Gates Creek and around Rabbit Butte. The second most active area is about a mile north of the mouth of Biggs Creek along the North Fork of the Sun River.

BENCHMARK RAWS 8/20/88

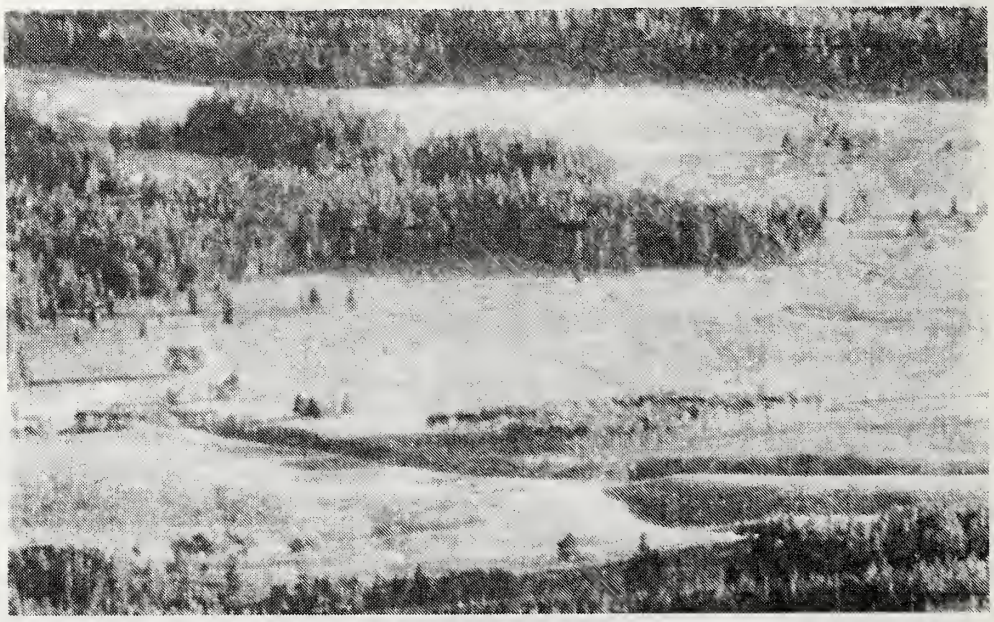
TIME	READING
1146, 1446-1546 1446, 1746 1346-1646 0746	MAX TEMP 65° MIN R/H 23% MIN 1 HR 4% MAX R/H 42%

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
0800	46°	68%	13%	CALM	.3 CLOUD COVER

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
0815	3-7 MPH SW GUSTS TO 10 MPH	.3	
1355	5-15 MPH SW GUSTS TO 20 MPH	.4	



8/20/88 Biggs Flat - before and after.

8/21/88 Sunday

The interior of the fire increases some. Water drops and ground work by 6 District personnel continue as the fire becomes more active.

SPOT FORECAST FOR..GATES PARK FIRE 2 PM MDT SUNDAY AUGUST 21, 1988

1. DISCUSSION: STRONG UPPER AIR RIDGE MOVING IN FROM THE PACIFIC. NORTHWEST WINDS AND CLOUDS SHOULD DECREASE TONIGHT. RATHER COLD TONIGHT. SUNNY AND DRY CONDITIONS MONDAY THROUGH THURSDAY. WARMING TEMPERATURES. LIGHTER WINDS.

2. FOR TONIGHT.....
   A. WEATHER... FAIR
   B. CWR...ZERO
   C. TEMPERATURE.. 5400 FT 35 DEGREES 8000 FT 30 DEGREES
   D. HUMIDITY... LOWEST 5400 FT 78 PCT 8000 FT ONLY 19 PCT
   E. WIND..EYE LEVEL...DECREASING TO LIGHT SLOPE WINDS 3 TO 7 MPH. FREE AIR WINDS NORTHWEST 12 MPH.

3. FOR MONDAY.....
   A. WEATHER....SUNNY
   B. CWR... ZERO
   C. TEMPERATURE...HIGHEST 5400 FT 69 8000 FT 58
   D. HUMIDITY... LOWEST 5400 FT 20 PCT 8000 FT 19 PCT.
   E. WIND..EYE LEVEL... LIGHT NORTHWEST TO NORTH 5 TO 12 MPH.

4. OUTLOOK FOR TUESDAY-THURSDAY...FAIR SKIES. DRY WITH POOR HUMIDITY RECOVERY AT NIGHT. LIGHT WINDS VARIABLE IN DIRECTION 4 TO 10 MPH. WARMER AFTERNOONS.

BENCHMARK RAWS 8/21/88

TIME	READING
1646	MAX TEMP 67°
1646	MIN R/H 23%
1546-1746	MIN 1 HR 5%
0646	MAX R/H 88%

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
1300	57°	40%	7%	4-8 G 10-12 NW	CLEAR

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
1510	2-5 MPH W GUSTS TO 10 MPH	.2	

The fire perimeter is little changed. Fire size remains at 20,798 acres.

8/22/88 Monday

SPOT FORECAST FOR.. GATES PARK 9:25 AM MDT MONDAY AUGUST 22, 1988

1. DISCUSSION: HIGH PRESSURE CONTINUE TO BUILD OVER AREA AND AIR MASS TO WARM AND DRY. PROGRESSIVELY POORER HUMIDITY RECOVERY AT NIGHT.

2. FOR THE FIRST BURN PERIOD...THIS AFTERNOON
   A. WEATHER...MOSTLY SUNNY
   B. CWR...ZERO
   C. TEMPERATURE..MAX NEAR 70 TOP AND 83 BOTTOMS
   D. HUMIDITY... 12 TO 22 PCT
   E. WIND..EYE LEVEL... UPSLOPE 0 TO 5 WITH NE TO SE 5 TO 15 RIDGES AND THROUGH PASSES. NW 15 GUSTY EAST SLOPES ROCKIES.

3. FOR THE SECOND BURN PERIOD... TONIGHT
   A. WEATHER...CLEAR
   B. CWR... ZERO
   C. TEMPERATURE...35 TO 45.
   D. HUMIDITY...MAX 70 PCT BOTTOMS 30 TO 40 SLOPES/RIDGES
   E. WIND..EYE LEVEL... DOWNSLOPE 0 TO 5...E TO SE 5 TO 15 RIDGES.

4. OUTLOOK FOR FOLLOWING BURN PERIOD..TUESDAY LITTLE WARMER AND DRIER. LIGHT WINDS.

At 1600 a meeting is held in Choteau with District and Forest staffs, tactical teams, Stiger, Tomascak, and Orville Daniels, Supervisor of the Lolo National Forest. The decision is made to fully implement the Biggs Creek burn-out recommendation in the 8/18 contingency plan. Bunnell will go home for the night, but will return on 8/23 to head up the burnout. Jerry Williams, Lolo Fire Staff, will replace Bennett as Ops Chief.

The fire activity increases in the afternoon, especially in the Biggs Creek area. The fire crosses Biggs Creek by 1715. A helicopter with bucket and 6 person crew are not able to hold this area. The fire runs southeast across Sulphur Creek. Bunnell, on his way to Kalispell, flying over the area orders Type I crew for 0600 the next morning, along with an additional helicopter.

Kamrud and Smith make a patrol flight to assess situation. Burn-out parameters are exceeded and are no longer an option. After phone call from Kamrud to Bunnell at 2230 confirming extent of fire east of Biggs Creek, Bunnell orders a second Type I crew. Also ordered were 1 incident dispatcher, 3 Mark III pumps, 10,000 feet of fire line explosives and a blaster.

BENCHMARK RAWS 8/22/88

TIME	READING
1746	MAX TEMPERATURE 78°
1646-1746	MIN R/H 14%
1446-1846	MIN 1 HR 4%
0746	MAX R/H 95%

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
0830	43°	72%	15%	CALM	.8 CLOUD COVER
1330	66°	25%	6%	5-8 SW	CLEAR

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
1305	5-10 MPH W GUSTS TO 15	CLEAR	

The fire perimeter increased by about 500 acres primarily in the Biggs Creek area. Fire size is now 21,207 acres.

8/22/88 2100 - Fire burning across meadow in Sulphur Creek. W. Jaeger Photo

RICO FIRE BEHAVIOR SERVICE CENTER, 8/22 am

ADVISORY -- An upper layer of very low relative humidity, currently at or about the 9000' elevation but dropping, will be causing thermal belt conditions with increased and prolonged night time burning. THIS DEVELOPING THERMAL BELT CONDITION SHOULD BE CLOSELY MONITORED IN CONJUNCTION TO THE SOMETIMES SEVERE AND ERRATIC BEHAVIOR THAT CAN OCCUR WHEN INVERSION LAYERS BREAK AND CONVECTION COLUMNS DEVELOP RAPIDLY. THIS TYPE OF SITUATION HAS ALWAYS BEEN A POTENTIALLY HAZARDOUS PROBLEM FOR ALL FIREFIGHTERS. INVERSIONS HAVE BEEN BREAKING BETWEEN 0900 AND 1200 HRS ACROSS THE REGION DURING THE PREVIOUS TWO WEEKS. THE TIME PERIOD WILL VARY DEPENDING ON THE STRENGTH AND THE TOPOGRAPHIC LOCATION OF THE INVERSION LAYER.

-- Possible strong gusts today of between 20-45 mph can be expected at 6000' and above across the northern portion of the Region. Increasing speed with increasing elevations. Winds will be from the NW to W. All fires near ridges and mountain tops should be aware.

A building high pressure system returns us to warmer, dryer day time conditions (80's today, 90's tomorrow). Our evenings are now much more autumn-like after the last cold front. I believe we have left summer behind us in spite of the summerlike temperatures during the days, and have entered into a prolonged "Indian Summer." Temperatures will definitely be very cool to down-right cold at our higher elevations because of the high pressure system and night radiation. Time to get out the long underwear and stocking caps. These conditions will also increase the strength of inversion layers, trapping smoke in low-lying areas for longer durations, then adding to fire behavior when those inversions break.

Only lightning activity yesterday was in north-central Wyoming for this portion of the country (148 strikes). Slight chance of isolated thunderstorms in that same region and the northern Great Plains today. Increasing thunderstorm activity by Thursday for the southern and western zones of the Region.

Our NW mountain areas received moderate to good fuel moisture recovery last night with freezing temperatures above the 5000' levels. The north-central mountains in Montana had good recovery, while the valley areas received only a poor recovery. Our mountain areas in southern Montana generally had good recovery last night, as did areas along the Rocky Mountain front. Yellowstone Park and the eastern grasslands had poor to moderate fuel moisture recovery.

Because of the development of autumn-like conditions we are beginning to see differences in fuel moisture and Probability of Ignition between the valley and ridge areas. In Yellowstone Park low 1 hr fuel moistures today will be in the 3-4% range with Probability of Ignition in the 70-90% range in the valleys, and 3-5% 1 hr moistures and a 60-80% P. of I. on the ridges. In western Montana less difference will be noticed between valley and ridge weather today, 1 hr low moistures will be from 3-6% with a P. of I. of 50-80%. In eastern Montana the higher elevations will have the same values as western Montana, while the lower elevations will have low 1 hr moisture of 3-5% with a Probability of Ignition of 70-90%.

Chuck Bushey
commercial 329-4850 (FTS 584)
DG RICOPLANS:R01D

8/23/88 Tuesday

Bunnell arrives at Choteau at 0530. He organizes a heli-attack group at Our Lake Heli-base and sets up fly in schedule to the southeast flank of fire as soon as smoke permits. Bunnell and Linse, Flathead IH superintendent, fly into the fire at 0850. Linse establishes a helispot in an opening on Sulphur Hill and Bunnell scouts the fire. Thirty personnel, all of the Flathead IH crew and half of the Helena IH crew, are ferried into the Sulphur Creek area. Ten people, half of the Helena crew, go to the Route Creek area to reinforce existing line. The fire is located and line started by the Flathead IH crew in the vicinity of Max Barker's outfitter camp on east side of Biggs Creek.

SPOT FORECAST FOR..GATES PARK 9:40 AM MDT TUESDAY AUGUST 23, 1988

1. DISCUSSION:HOT DRY HIGH PRESSURE WILL CONTINUE OVER AREA NEX FEW DAYS. LIGHT WIND PATTERN. LOW HUMIDITY RECOVERY SLOPES/RIDGES AT NIGHT

2. FOR THE FIRST BURN PERIOD...THIS AFTERNOON
   A. WEATHER... SUNNY
   B. CWR... ZERO
   C. TEMPERATURE.. NEAR 90 BOTTOM TO NEAR 82 TOP
   D. HUMIDITY... 15 TO 25 PCT
   E. WIND..EYE LEVEL... MOSTLY LIGHT TERRAIN WINDS...SE TO E AT RIDGES

3. FOR THE SECOND BURN PERIOD...TONIGHT
   A. WEATHER...MOSTLY CLEAR
   B. CWR...ZERO
   C. TEMPERATURE...30S BOTTOM...TO UPPER 40S SLOPES
   D. HUMIDITY... RECOVERY TO NEAR 70 PCT BOTTOMS...30 PCT RIDGES/SLOPES
   E. WIND..EYE LEVEL...LIGHT DOWNSLOPE...SE 10 RIDGES

4. OUTLOOK FOR FOLLOWING BURN PERIOD...WEDNESDAY...LITTLE CHANGE.

By 1100, Bunnell assesses the fire at 200 acres across Biggs Creek. The line is constructed half way around the north and east flank by 1200. A heavy smoke inversion cools the fire. By 1220, all crews are on the ground and working on the line. At 1320, the fire along the north flank exceeds their holding capability. Helicopter 129 with bucket has mechanical failure and returns to town. The fire escapes containment efforts and exceeds all lines by 1515. Bunnell orders Ops Chief and Mark III aerial ignition dispenser to burn out. At 1545 fire crosses Sulphur Hill to the east. The crews are ordered to reestablish an anchor in Biggs Creek, south of Barker's, camp staying south of fire. The crew starts developing a spike camp and moving gear to Biggs Creek triangle for the night. They develop line from Biggs Creek east on the south flank, burning out as they go. At 2000 they prepare the camp.

Smith and Kamrud fly fire and meet with Ops Chief Jerry Williams and RICO Fire Behavior Specialist Chuck Bushey and discuss what they can expect for the next several days. Bushey and Williams return to Missoula. At 2100 Smith, Kamrud, Love, and Bunnell meet to develop new plan.

At 2400, all lines are lost and the fire flanks the camp coming down Biggs Creek Flats jumping the river to the west. The camp is moved to confluence of Biggs Creek and the North Fork of Sun River. The fire is very active on south and west flanks.

BENCHMARK RAWS 8/23/88

TIME	READING
1746	MAX TEMP 85°
1746-1846	MIN R/H 14%
1646-1746	MIN 1 HR. 3%
0746	MAX R/H 84%

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
0800	35°	75%	14%	CALM	CLEAR
1110	65°	36%	8%	CALM	CLEAR
1400	78°	20%	4%	4-6 W	CLEAR
1600	80°	15%	4%	2-3 W	CLEAR

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
0720	0-3 MPH E	CLEAR	
1000	CALM	CLEAR	
1400	3-9 MPH W	CLEAR	
1600	3-7 MPH W GUSTS TO 10 MPH	CLEAR	

The fire perimeter is 22,451 acres.

8/24/88 Wednesday

Ops chief Jerry Williams arrives from Missoula. Bunnell briefs him on fire activity and line loss yesterday. Together, they plan new line development and burn out strategy. They decided to burn out mature fuel ahead of the fire with a Mark III dispenser if and as the fire makes runs to the east. A more defensible, straight line would be developed in the Grouse Creek area.

SPOT FORECAST FOR..GATES PARK 9:40 AM MDT WEDNESDAY AUGUST 24, 1988

1. DISCUSSION: HOT DRY HIGH PRESSURE WILL CONTINUE OVER AREA NEX FEW DAYS. LIGHT WIND PATTERN. LOW HUMIDITY RECOVERY SLOPES/RIDGES AT NIGHT

2. FOR THE FIRST BURN PERIOD...THIS AFTERNOON
   A. WEATHER... SUNNY
   B. CWR... ZERO
   C. TEMPERATURE.. NEAR 85 BOTTOM TO NEAR 73 TOP
   D. HUMIDITY... 12 TO 22 PCT
   E. WIND..EYE LEVEL... MOSTLY LIGHT TERRAIN WINDS...NORTHWEST LOW ELEVATIONS 3 TO 8 MPH...RIDGES WEST 5 TO 10 MPH

3. FOR THE SECOND BURN PERIOD...TONIGHT
   A. WEATHER...MOSTLY CLEAR
   B. CWR...ZERO
   C. TEMPERATURE...40S BOTTOM...TO 50S ON THE SLOPES
   D. HUMIDITY... RECOVERY TO NEAR 70 PCT BOTTOMS...30 PCT RIDGES/SLOPES
   E. WIND..EYE LEVEL...LIGHT DOWNSLOPE...WEST 5 TO 10 MPH

4. OUTLOOK FOR FOLLOWING BURN PERIOD THURSDAY AND FRIDAY. LITTLE CHANGE.

A new line is developed and burnt out south of where Biggs Creek enters the river. This line runs due east to where Trail No. 110, the main eastside river trail, crosses Sulphur Creek. This line holds securing the new camp, about one mile down river from last nights camp. The line is extended north of Grouse Creek from this trail, but is lost in late afternoon when fire spots south and east across Grouse Creek. The line is redeveloped about 1/2 mile south of original line and south of Grouse Creek. Bunnell directs a burn out ahead of the fire when it runs east towards mid elevation on Grouse Creek. Williams continues to direct line development.

The crew in the north is reinforced by 8 district people to mopup in Route Creek and work on new activity on the the ridge above the North Fork of the Sun River opposite the mouth of Wrong Creek. A spike camp is reestablished at Wrong Creek cabin. With only one helicopter, all of the work is ground oriented. There is a major movement of the fire along the south flank, west of river, and along the west toward Lookout Mountain.

BENCHMARK RAWS 8/24/88

TIME	READING
1546-1646	MAX TEMP 86°
1246	MIN R/H 14%
1246-1846	MIN 1 HR 4%
0746	MAX R/H 85%

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
0840 1550	39° 81°	77% 16%	14% 3%	CALM 2-3 MPH W	CLEAR

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
0845 1405	3-10 MPH E/NE 0-52 MPH SW GUSTS TO 10	CLEAR SMOKED IN	

The fire is now 26,102 acres.

8/22/88 1630 - Fire in Sulphur and Grouse Creeks. W. Jaeger, Jr. Photo

8/25/88 Thursday

SPOT FORECAST FOR GATES PARK 1110 MDT THURSDAY AUGUST 25, 1988

1. DISCUSSION: A WEAK WEATHER SYSTEM IS PASSING THROUGH TODAY. IT WILL MOVE EAST THIS AFTERNOON, CAUSING SOME CONVECTIVE ACTIVITY IN AREA.

2. FOR THIS AFTERNOON...
   A. WEATHER...PARTLY CLOUDY. 10% CHANCE OF DRY THUNDERSTORMS
   B. CWR...NEAR ZERO
   C. TEMPERATURE.. COOLER THAN WED...MAX NEAR 80
   D. HUMIDITY...STILL LOW.. MIN 15-20%
   E. WIND..EYE LEVEL... BECOMING WEST, 5-10 MPH.

3. FOR TONIGHT....
   A. WEATHER... CLEARING...10% CHANCE OF EARLY EVENING THUNDERSTORMS.
   B. CWR... NEAR ZERO
   C. TEMPERATURE.. MINE 39-43...WATCH FOR THERMAL BELT REGIONS HOWEVER
   D. HUMIDITY...RECOVERY GENERALLY FAIR... MAX 65% BOTTOMS, NEAR 35% RIDGES AND MID-SLOPES...
   E. WIND..EYE LEVEL... WEST EXPOSED AREAS 3-8 MPH, OTHERWISE DOWNSLOPE.

4. OUTLOOK FOR FRIDAY....MOSTLY SUNNY. SLIGHT CHANCE OF AFTERNOON AND EVENING THUNDERSTORMS. BREEZY AT TIMES FROM THE W 10-15 MPH. TEMPS DOWN 4 DEGREES, RH UP 3%.

A front of clouds pass over the fire in the morning bringing a light drizzel to some areas. Bunnell decides to develop a secondary line down the east side trail (No. 110) to Bridge Creek and then northeast up Bridge Creek to the limestone out cropping. The crew completes this line by 1300.

The Route Creek crew starts mopping line and redeveloping segments of line lost in Frazier Creek. Bunnell orders Doug Maryott from Flathead as new Operations Chief, as word comes that the Lolo fire situation is not good and the Lolo has requested the return of Jerry Williams. The fire is most active in late afternoon and on west flank.

BENCHMARK RAWS 8/25/88

TIME	READING
1346, 1546	MAX TEMP 85°
1946	MIN R/H 16%
1546	MIN 1 HR 4%
0646	MAX R/H 87%

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
0840	44°	80%	16%	CALM	

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
0800 1400	10-15 MPH SE 3-6 MPH SW GUSTS TO 10	100% .5	RAIN

The fire perimeter is 26,372 acres.

8/25/88 A morning inversion fills the valley with smoke. W. Jaeger, Jr. Photo

8/26/88 Friday

SPOT FORECAST FOR...GATES PARK NOON MDT AUGUST 26, 1988

1. DISCUSSION: CANADIAN COLD FRONT MOVING IN FROM THE NORTH WITH CLOUD BUT LITTLE RAIN THIS MORNING. WINDS BEHIND THE FRONT PICKING UP FROM THE NORTH THIS AFTERNOON AND TONIGHT. CLEAR DRY AND A LITTLE COOLER SATURDAY. EAST WINDS SATURDAY DECREASING SUNDAY.

2. FOR TODAY AND TONIGHT...
   A. WEATHER...CLOUDS TODAY CLEARING FROM THE NORTH LATER TODAY.
   B. CWR...BELOW 10 PCT.
   C. TEMPERATURE..HIGHS BOTTOM 77 TOP 68 LOWS TONIGHT BOTTOM 42 TO 52
   D. HUMIDITY...LOWS AFTERNOON NEAR 20 PCT RECOVERY TONIGHT 60 PCT RIDGES AND 70 PCT BOTTOM.
   E. WIND..EYE LEVEL...INCREASING FROM THE NORTH 10 TO 25 MPH THIS AFTERNOON AND NORTHEAST 10 TO 20 TONIGHT.

3. FOR SATURDAY.....CLEAR DRY WITH EAST WINDS. HIGHS BOTTOM 69 TO TOP 58. LOWEST HUMIDITY 20 PERCENT. WINDS EASTERLY 10 TO 20 MPH RIDGES AND EAST-WEST PASSES GUSTY EASTERLY 35 MPH.

Bunnell decides to direct attack all spots and fire south of Grouse Creek. He and Linse scout the line from Trail No. 110 to the goat rocks on Horse Hill. Half the force starts working on this line while the other half continues the secondary line east, up Bridge Creek. The line is extended up Bridge Creek by hand to a point of continuous timber cover as other hand crews work in Grouse Creek. The saw team cuts line through timber to goat rocks for future explosive line development scheduled for the next day. Williams is released back to the LoLo. Bunnell orders a district person into the Cabin Creek cabin to set up a pump and cover it with reflective tarps. He also orders an outfitter out of Cabin Creek area and requests that the area closure be extended south of Cabin Creek on the east side of the Sun River. The 6 members of the Helena IH crew who were working in the Route Creek area are ferried down to help on the south flank. Bunnell arranges for a crew of District people to go into Wrong Creek the next morning. There is some smoke showing up around Frazier Creek, but overcast skies and .11 inches of rain in the afternoon keep the fire activity low.

BENCHMARK RAWS 8/26/88

TIME	READING
1046	MAX TEMPERATURE 65°
1046	MIN R/H 38%
1046	MIN 1 HR 8%
1346	MAX R/H 90%

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
0800	47°	68%	14%	CALM	
0800	46°	74%	15%	CALM	READINGS TAKEN AT GROUSE CR .14 RAIN

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
0800 1405	0-5 MPH NE 2-9 MPH E/GUSTS TO 12	.9 100%	TRACE PRECIP RAINING .11

The fire perimeter is 26,655 acres.

8/26/88 Inversion is not so heavy.

RICO FIRE BEHAVIOR SERVICE CENTER, 8/26 am

Current big news is a dry, cold front moving down from Alberta which will be accompanied by strong winds. Winds are estimated to be 40-50 mph across the mountain passes from east to west. Surface winds will be in the 15-30 mph range. Winds are expected to decrease by Sunday. The front should pass out of the state by late tonight. Slightly cooler temps into the 70's will result tomorrow.

Fuel moisture recovery last night was moderate in the western portion of the Region. Areas in the Salmon River Breaks, SE Yellowstone Park, and the eastern Montana grasslands had poor recovery. All areas can expect 1 hr fuel moistures to reach lows this afternoon in the 2-4% range.

Current lightning activity is located in far eastern Montana and NE Wyoming with approximately 50 strokes recorded between 0600 and 0930 this morning. Yesterday's lightning activity ended up being scattered across the entire Region. Concentrations were principally in the areas of the NezPerce, Clearwater and Lolo National Forests and down in Yellowstone Park. In the 24 hr period between 0600 yesterday till 0600 today there were 347 strikes in our monitoring area. Current lightning potential for the Region is relatively low, though strikes are creating what appears to be a high percentage of new starts.

Down in the Yellowstone Park area today, for those who are following the activity down there, they have a strong inversion this morning with very dry air. Later this afternoon the fires there can expect strong winds in the 15-35 mph range, with stronger gusts on the higher ridges. Their fire behavior, like all areas today can be expected to be very active.

Chuck Bushey
commercial 329-4850 (FTS584)
DG RICOPLANS:R01D

8/27/88 Saturday

SPOT FORECAST FOR... GATES PARK 11:30 AM MDT SATURDAY AUGUST 27, 1988

1. DISCUSSION: A LITTLE COOLER TODAY FOLLOWING YESTERDAY FRONT. HIGH PRESSURE OVER CENTRAL MONTANA TODAY FOR CLEAR SKIES AND LIGHT EASTERLY WINDS ALOFT. A LITTLE WARMER AND DRIER WITH LIGHT SOUTHEAST WINDS SUNDAY.

2. FOR TODAY AND TONIGHT.....
   A. WEATHER...CLEAR
   B. CWR...ZERO
   C. TEMPERATURE.. HIGH BOTTOM 68 TOP 54
   D. HUMIDITY... LOWEST BOTTOM 24% TOP 40%
   E. WIND..EYE LEVEL...SOUTHEAST 5 TO 10 MPH RIDGES SE 15 MPH.

3. FOR TONIGHT.....
   A. WEATHER...CLEAR
   B. CWR... ZERO
   C. TEMPERATURE...LOWEST BOTTOM 34 TOP 42
   D. HUMIDITY...HIGHEST BOTTOM 92% TOP 55%
   E. WIND..EYE LEVEL... DOWNSLOPE 3 TO 7 MPH RIDGE SOUTHEAST 10 MPH

4. OUTLOOK FOR SUNDAY AND MONDAY...CLEAR. TEMPERATURES UP 5 DEGREES WITH HUMIDITY SLIGHTLY LOWER 5%. WINDS SOUTHEAST TO SOUTH 5 TO 12 MPH. RIDGE WINDS SOUTHEAST 10 MPH.

Doug Maryott takes over as Ops Chief. Bunnell orders the line constructed from Grouse Creek to the main trail to be burned out with a Mark III dispenser as soon as fuel moisture permits. Linse and Maryott are to test first with fusees. The intent is to redevelop the line and square it up from the trail, with as much mopped up black line south of Grouse Creek as possible.

The crew lines a spot above Horse Hill. A team of 4 pounders and 2 sawyers with a pyramid tank and water bug works on it most of afternoon. When spots west of the river become more active, a helicopter start making water buckets drops on them, as well as on spots east of Sulphur Hill. The District crew, working out of Wrong Creek on the fires northern perimeter, concentrates on spruce bottoms areas in Frazier Creek. The work is hampered by deep duff, poor water chance and heavy fuels. The idea is to continue to buy time and keep maintaining the line developed last week by explosives.

The Forest meets with outfitters, irrigators, State Senator Ted Newman and US Senate Subcommittee staffer George Paul in Augusta to discuss the wilderness fire management policy. Representatives of the Montana Wilderness Association also attend.

BENCHMARK RAWS 8/27/88

TIME	READING
1546	MAX TEMPERATURE 75°
1546	MIN R/H 30%
1446-1646	MIN 1 HR 6%
0146-0846	MAX R/H 100%

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
0815 1400	CALM 0-5 MPH E TO SW	CLEAR .6	

The fire perimeter remains at 26,655 acres.

The main trail is used as a fire line for burn out operations.

8/28/88 Sunday

The blasting team works on the secondary line in the Bridge Creek area, with both helicopters now in service moving explosives in from Our Lake helibase. Both IH crews punch line to the Horse Hill rock slide. Eight fresh people replaces the District crew in the Route Creek area. By noon the crew had completed the line from the slide area on Horse Hill to the river.

Bunnell recons the Grouse Creek area above Sulphur Hill and meets the crew at the Horse Hill helispot at 1600. There they decide to burn out the line back to camp. At 2000 Bunnell and Maryott begin the burnout using hand held drip torches. The burnout is a strip head fire at 3 and 4 intervals from Grouse Creek south to the line. Smoke from the burnout is visible in Choteau that evening. All 40 crew members work until night fall. Two are left to patrol till midnight. Considerable interior burnout is observed on a sector of the fire and burnout is patchy, but hot. The relative humidity is too high in bottom of Grouse Creek and at 2130 burnout is halted. About 6000 feet of line completed by evening with 3000 more planned for Monday

Stiger becomes acting FMO as Kamrud returns to school.

SPOT FORECAST FOR...GATES PARK 3:15 PM MDT SUNDAY AUGUST 28, 1988

1. DISCUSSION: WARM DRY AIR MASS OVER THE AREA TONIGHT AND EARLY MONDAY. WINDS ALOFT INCREASING FROM THE SOUTH MONDAY. A PACIFIC WEATHER FRONT MOVING THROUGH MONDAY NIGHT WITH WINDS...SOME WINDS BUT ONLY LIGHT SHOWERS. WEST TO NORTHWEST WINDS FOLLOWING THE FRONT TUESDAY.

2. FOR TONIGHT.....
   A. WEATHER..CLEAR
   B. CWR... ZERO
   C. TEMPERATURE..LOWEST BOTTOM 38 TOP 44
   D. HUMIDITY...HIGHEST BOTTOM 92% TOP 40%
   E. WIND..EYE LEVEL... DOWNSLOPE 3 TO 7 MPH RIDGE SOUTHEAST 10 MPH

3. FOR MONDAY.....
   A. WEATHER...SUNNY TO INCREASING HIGH CLOUDS
   B. CWR...ZERO
   C. TEMPERATURES...BOTTOM HIGH 84 TOP 74
   D. HUMIDITY...LOWEST BOTTOM 16 PCT TOP 19 PCT

4. OUTLOOK FOR MONDAY NIGHT AND TUESDAY...PACIFIC WEATHER FRONT MOVING THROUGH MONDAY NIGHT. CLOUDS AND SOME SCATTERED SHOWERS BUT NOT A REAL WETTING RAIN. SOUTH WINDS MONDAY EVENING TURNING GUSTY WESTERLY LAT MONDAY NIGHT AND TUESDAY. FAIR AND SLOWLY WARMING AND DRY WITH LIGHTER WINDS WEDNESDAY AND THURSDAY.

BENCHMARK RAWS 8/28/88

TIME	READING
1446	MAX TEMPERATURE 82°
1246	MIN R/H 13%
1446-1646	MIN 1 HR 4%
0146-0846	MAX R/H 100%

BEARTOP LOOKOUT

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
1355	0-5 MPH SW GUSTS TO 9	CLEAR	

The fire perimeter is 26,982 acres.

8/28/88 1650 - Hot spot west of North Fork Sun River near Biggs Creek. W. Jaeger, Jr. Photo

8/29/88 Monday

Gorman, Casey and Stiger attend a meeting in Lincoln where continuation of the contingency plan is approved.

0930: The smoke inversion lifts and the helicopters start flying earlier than usual. At 1045 the helicopters are diverted from hauling explosives to dropping water on hot spots west of river above Sulphur Hill and areas around Route Creek and Frazier Creek. All areas except the northeast perimeter near Route Creek show increased activity. Above Sulphur Hill a minor run can not be stopped by helicopter water bucket drops.

SPOT FORECAST FOR...GATES PARK 1:15 PM MDT MONDAY AUGUST 29, 1988

1. DISCUSSION: PACIFIC WEATHER FRONT OVER CENTRAL WASHINGTON THIS AFTERNOON IS EXPECTED TO MOVE THROUGH THE FIRE AREA NEAR 10 PM TONIGHT AND DOWN THE EAST SLOPE OF THE ROCKIES AT SUNRISE TUESDAY MORNING. NOT MUCH RAIN WITH THE FRONT...BUT SHIFTING WINDS TONIGHT FOLLOWED BY NORTHWEST WINDS TUESDAY.

2. FOR TONIGHT.....
   A. WEATHER..PARTLY CLOUDY...ISOLATED MOUNTAIN SHOWERS
   B. CWR... BELOW 10 PCT
   C. TEMPERATURE..LOW IN THE LOW 40S
   D. HUMIDITY... 80 PCT BOTTOM AND 60 PCT TOP
   E. WIND..EYE LEVEL... INCREASING SOUTHWEST 10 TO 25 RIDGES THIS EVENING SHIFTING WEST TO NORTHWEST 15 TO 25 MPH AFTER 10 PM.

3. FOR TUESDAY.....
   A. WEATHER...PARTLY CLOUDY...ISOLATED MOUNTAIN SHOWERS.
   B. CWR...BELOW 10 PCT.
   C. TEMPERATURE... HIGH BOTTOM 74 TOP 64
   D. HUMIDITY... LOWEST BOTTOM 20-25 PCT HIGH ELEVATIONS 30 TO 40 PCT.
   E. WIND..EYE LEVEL... WEST TO NORTHWEST RIDGES 15 TO 25 SPILLING DOWN EAST SLOPES.

4. OUTLOOK FOR WEDNESDAY-FRIDAY...FAIR DRY WEATHER WITH SLOWLY WARMING TEMPERATURES. LIGHTER WINDS BEGINNING WEDNESDAY.

1300: The fire starts a major run on the northwest flank west of Rabbit Butte. The crew on the southeast flank continues to burnout line and hold it at the base of Grouse Creek. Escalating northwest winds causes extensive burning against this line at 1400 and again from 1600 till 2000, but water drops and ground work hold the line. A spot develops in the south, west of river. A helicopter drops water on it, but when Linse and Maryott recon it they feel that it may cause trouble. At 1615 the aerial ignition dispenser and operator are released back to Lincoln as they will not be needed for the next couple of days.

1705: Bunnell recons the fire on the northwest and orders the District crew to leave the Route Creek area and return to the Wrong Creek cabin to extend the Mark III pump and hose lay from river up to midslope. The crew also clears dead material and prunes trees around the cabin.

By 1830 the secondary line is fully completed in Bridge Creek. The predicted frontal system moves in with increasing winds and, although all preparations have been completed, the burnout can not implemented. The fire moves across the river, north of the mouth of Biggs Creek, but all resources

remain committed to the line and in Wrong Creek. Beartop Lookout and members of the Helena IH crew serve as night guards and scouts. Despite heavy interior activity all night, the south line holds.

BENCHMARK RAWS 8/29/88

TIME	READING
1446-1646	MAX TEMPERATURE 84°
1746-1846	MIN R/H 14%
1546-1646	MIN 1 HR 3%
0746	MAX R/H 76%

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
1515	82°	15%	3%	7-9 S/SW	GUSTING 10-15

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
1200	6-9 MPH GUSTS TO 12 SW	CLEAR	
1400	10-15 MPH GUSTS TO 20 SW	CLEAR	

The fire perimeter is 27,334 acres.

(During the evening of 8/29/88, the Canyon Creek Prescribed Fire crosses the Wilderness boundary. Pushed by strong winds, it burns intensely throughout the night. It is declared a wildfire at 4:00 am on 8/30/88. When controlled, the fire will have burned 125,000 acres of National Forest and private land on the Lewis and Clark National Forest.)

8/30/88 Tuesday

SPOT FORECAST FOR...GATES PARK FIRE 11:00 AM MDT TUESDAY AUGUST 30, 1988

1. DISCUSSION: DRY FRONTAL SYSTEM WEAKENING, BUT WILL MOVE ACROSS THE FIRE AREA IN THE NEXT FEW HOURS. MAIN FEATURE WILL BE GUSTY WINDS. COOLER TODAY, BUT WARMER AGAIN FOR THE REST OF THE WEEK.

2. FOR TODAY...
   A. WEATHER...MOSTLY CLEAR
   B. CWR... ZERO
   C. TEMPERATURE...6500 FEET..NOON 60, AFTERNOON HIGH 72
   D. HUMIDITY.. 6500 FT.. NOON 38%, AFTERNOON MINIMUM 25%
   E. WIND..EYE LEVEL...ERRATIC...VARIABLE 5 TO 12 SHELTERED AREAS...W TO N 15 GUSTY EXPOSED SW TO NW SLOPES... RIDGES WINDS UP TO 25 MPH GUSTY...

3. FOR TONIGHT....
   A. WEATHER... MOSTLY CLEAR
   B. CWR... ZERO
   C. TEMPERATURE.. MINS LOW 30S BOTTOMS...MID 40S UPPER SLOPES/RIDGES
   D. HUMIDITY...MAX 70 PCT BOTTOMS...45 PCT UPPER SLOPES/RIDGES.
   E. WIND..EYE LEVEL...DIMINISHING AFTER DARK. BECOMING DOWNSLOPE/DOWNCANYON 3 TO 6 MPH... FEW GUSTS...RIDGE WINDS NORTHWEST 15.

4. OUTLOOK FOR WEDNESDAY....WARM AND DRY.... LESS WINDS BUT SOME AFTERNOON GUSTINESS. TEMPS UP ABOUT 5 DEGREES, HUMIDITY LITTLE CHANGE OR DOWN A FEW POINTS.

SMOKE MANAGEMENT FORECAST...GOOD DISPERSION ABOVE MOUNTAIN TOPS TODAY WITH TRANSPORT WINDS NORTHWEST 20 THIS AFTERNOON...DISPERSION BECOMING POOR AFTER MIDNIGHT THROUGH EARLY MORNING...THEN LIKELY GOOD AFTERNOON.

The Fire is very active on north and west flanks west of the river. The line in the south is heavily reinforced with water before noon and 1 squad is moved west of the river to begin lining the south flank of fire spread. An increasing wind challenges the south line and the fire exceeds the first line developed west of river. The helicopter with bucket is grounded due to wind.

1240: With the fire hooking around toward the base camp, Bunnell orders 1 load of retardant for the south flank of the fire. An interesting string of events leads to the ordering of this retardant. At the 8/29 meeting in Lincoln, the use of retardant was strongly encouraged by line officers and R-1 staff.

1308: Great Falls dispatch asks if he can take a military aircraft as other tankers are not available. (NOTE: At this very time, south of the Gates Park Prescribed Fire on the Rocky Mountain District, three tankers are committed to the Canyon Creek Fire which crossed over the Wilderness boundary and was threatening private homes and ranch buildings.) Bunnell says no, the target area is can not be hit with a large aircraft and he cancels retardant the order.

1330: The fire spots ahead to the flats across from camp. With both helicopters down for fuel, Bunnell orders a large retardant aircraft.

1400 Great Falls dispatch tells him that there are no aircraft available for this low priority fire. (It is in rotation, but is considered a low priority fire by RICO. Large MAFFS retardant units (C-130s) have been committed to Yellowstone Park for the protection of Cooke City and the Silver Tip Ranch). The fire

makes a move south, but stalls as wind abates. The crew starts a new line. For the time being, the camp is safe.

There is heavy interior burning on all sections of fire. The fire makes a significant run downhill in to the South Fork of Lick Creek east of Lick Mountain. At 1830 the Minnesota heliattack crew pulls the camp crew from Wrong Creek cabin and turns on the Mark III pump. The fire makes a run above Sulphur Hill, but it can only bump into an inescapable position in rock outcroppings so no resources are committed to either area. The full Flathead IH crew is committed west of the river above the base camp to develop a water system and reestablish hand line on the south flank. The fire exceeds this effort at 2000, but when the wind drops below 30 mph the helicopter is able to fly and, with bucket drops, cools the advance somewhat.

BENCHMARK RAWS 8/30/88

TIME	READING
1546-1746	MAX TEMPERATURE 77°
1546-1746	MIN R/H 12%
1646	MIN 1 HR 2%
0746	MAX R/H 42%

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
0750	38°	77%	14%	CALM	CLEAR
0750	43°	72%	14%	CALM	CLEAR - GROUSE CR. FIRE CAMP
1000	66°	30%	7%	CALM	CLEAR

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
0800	0-7 MPH GUSTS TO 20 NW	CLEAR	
1500	0-7 MPH GUSTS TO 10 W	CLEAR	

The fire perimeter is now 28,828 acres.

8/31/88 Wednesday

The District crew, from the Route Creek/Wrong Creek area, is moved to the south line, east of the river. They begin serious mop up on the line to a width of 100 feet. The two IH crews move west ot the river to develop a new line and water support. The plan is to increase line clearing widths on the south flank to whatever level or distance it takes to stop this fire from moving south towards Moose Creek.

Bunnell advises Great Falls Dispatch that retardant may be needed by late morning to assist in direct line construction. At 1104 the District replies that retardant is guaranteed if name requested by C-130. The crews develop a line again from river to the trail west of the river above camp. As the inversion lifts and wind picks up, the existing line on the west flank is burned out and the north flank is held with bucket work. When the wind shifts from southwest to northwest, the burn out does not go well.

1315: The fire exceeds new line on the south flank and makes a move toward camp. Bunnell orders C-130 a retardant drop on the camp coordinates.

1328: Great Falls dispatch relates that there is no retardant available for this low priority fire. MAFFS units (C-130s) have again been committed to Yellowstone Park. However, three tankers are assigned to the Elk Creek Division of the Canyon Fire also on the Rocky Mountain District where private property and structures are being protected.

1340: Retardant is requested again and district contacts Walt Tomascak in Regional Office for assistance in getting retardant. Smith contacts the Assistant Regional Coordinator, Charlie Rogers and gets clearance to change one tanker from the Canyon Creek Fire to the Gates Park Fire. As the closest ship is loading out of Kalispell, Smith contacts Marilyn Johnson, Flathead Dispatcher and she reroutes a ship to the Gates Park Fire. In the meantime, all retardant ships are pulled to protect the Silvertip Ranch and a crew near Yellowstone Park. Johnson calls Smith and they agree to fill the tanker and dump it on the Gates Park Fire enroute to Yellowstone.

1505: Tanker 65 delivers a single salvo load providing somewhat of an anchor point for line construction on the south flank.

At 1610 the north wind subsides and line construction becomes more effective. Most of the spots are picked up by helicopter bucketing so the squad guarding the camp is added to the line construction effort.

BENCHMARK RAWS 8/31/88

TIME	READING
1646	MAX TEMPERATURE 77 DEGREES
1646	MIN R/H 13%
1546-1646	MIN 1 HR 3%
0646	MAX R/H 82%

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
0920	46°	56%	12%	0-2 S-SE	CLEAR, NOT TAKEN AT GATES PARK, ELEV. 5600 FEET
1220	71°	25%	5%	UPSLOPE	CLEAR, NOT TAKEN AT GATES PARK

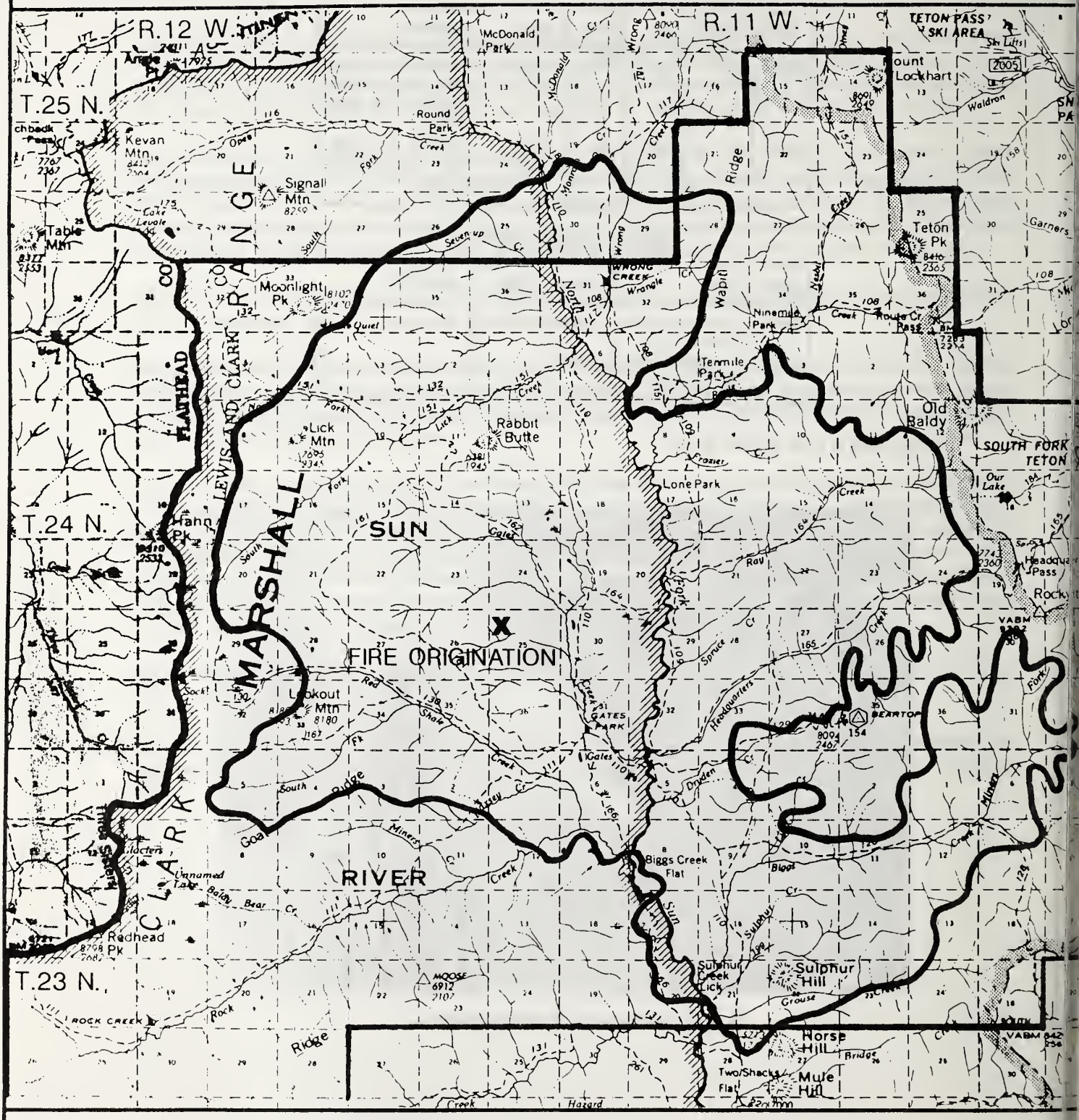
BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
0800	0-3 MPH GUSTS TO 5 N TO E	CLEAR	
1400	0-3 MPH GUSTS TO 7 S TO W	CLEAR	

The fire size is now 29,246 acres.

Dropping retardant. B. Bonney Photo

MAP 13 Gates Park Fire



Area CLOSED to the public

Perimeter of Fire

0 1 2 3 4 Mil S

9/1/88 Thursday

One Helicopter is down with mechanical problems, scrubbing the bucket operation in the Route Creek and Frazier Creek areas. These areas are beginning to show the lack of ground work for the past three days. The helicopter module for the down helicopter is sent to assist with the Canyon Creek Fire.

MISSOULA FIRE WEATHER OFFICE MORNING FORECAST 8:00 AM MDT THURSDAY SEPTEMBER 1, 1988

DISCUSSION...NEW MONTH BUT SAME OLD WEATHER. A STRONG HIGH PRESSURE RIDGE IS MOVING IN FROM THE PACIFIC BRINGING FAIR DRY CONDITIONS THROUGH SUNDAY. AFTERNOON TEMPERATURES WILL BE WELL ABOVE SEASONAL NORMAL THIS LABOR DAY WEEKEND. VERY DRY AIR ALOFT FOR POOR HUMIDITY RECOVERY AT NIGHTS HIGHER SLOPES AND RIDGES. NO RAIN IN SITE THROUGH SUNDAY. ONLY GOOD NEWS...VERY LIGHT AND VARIABLE WINDS TODAY.

ZONES: ALL ZONES 101, 102, 103, 104, 105, 106, 107, 108

TODAY.....
WEATHER: CLEAR BUT SMOKEY VALLEY BOTTOMS
LAL: 1 CWR: ZERO
MAXIMUM TEMPERATURES: 80 TO 90. MOUNTAINS 70S TO LOW 80S
MINIMUM HUMIDITIES: VERY LOW 13 TO 20 PCT
SURFACE WINDS: LIGHT AND MOSTLY UP SLOPE AND UP VALLEY 50 TO 10 MPH.
FREE AIR WIND: LIGHT AND VARIABLE 5 TO 8 MPH

TONIGHT....
WEATHER: CLEAR BUT SMOKEY VALLEY BOTTOMS
LAL: 1 CWR: ZERO
MINIMUM TEMPERATURES: UPPER 30S TO LOW 40S
MAXIMUM HUMIDITIES: ABOVE 70 PCT BOTTOMS BUT ONLY 45 TO 55 PCT UPPER SLOPES AND RIDGES.
SURFACE WINDS: LIGHT MOSTLY SLOPE WINDS 2 TO 5 MPH. RIDGES EASTERLY 10 MPH
FREE AIR WINDS: EASTERLY 5 TO 10 MPH.

FRIDAY.....
WEATHER: CLEAR BUT SMOKEY VALLEY BOTTOMS
LAL: 1 CWR: ZERO
MAXIMUM TEMPERATURES: UPPER 80S TO LOW 90S. MOUNTAINS 75 TO 85.
MINIMUM HUMIDITIES: 12 TO 20 PERCENT
SURFACE WINDS: LIGHT MOSTLY UP SLOPE AND UP VALLEY 4 TO 10 MPH. RIDGES SOUTHEASTERLY 8 TO 12 MPH.
FREE AIR WINDS: LIGHT SOUTHEASTERLY 10 MPH.

3-5 DAY OUTLOOK...SATURDAY-MONDAY DRY AND UNSEASONABLE WARM. HIGHS 85 TO 95. LOWS 40 TO 55. LIGHT WINDS. LOW HUMIDITY.

6-10 DAY OUTLOOK...TUESDAY SEPT 6 THROUGH SATURDAY SEPT 10
TEMPERATURES.....MUCH ABOVE NORMAL
PRECIPITATION.....LITTLE OR NONE

The plan is to finish burning out all segments of the newly constructed line on south flank, west of the river. At 1230 the inversion lifts, allowing the burnout to commence. With a hand held drip torch, Maryott fires each irregular piece larger that 1/4 acre. This causes some short range spotting from the larger areas, but all are picked up and the new line holds. The crews set up a full water hose lay from river up the south flank of the new line to prepare for mop up on Friday, 9/2/88. At 1900 recon reveals heavy interior burning in Gates, Red Shale and Biggs Creek areas. The fire appears lined up to move again in the South Fork of Lick Creek. The small runs high in Grouse and Sulphur do not warrant resources... yet.

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
0750 0900	30° 38°	100% 69%	17% 13%	CALM CALM	CLEAR CLEAR BIGGS CR. BASE CAMP

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
0800 1355	CALM 0-3 MPH GUSTS TO 8 N-E-S	CLEAR CLEAR	

The fire perimeter remains at 29,246 acres.

Heavy interior burning in Red Shale Creek. W. Jaeger, Jr. Photo

9/2/88 Friday

SPOT FORECAST FOR...GATES PARK 10:50 AM MDT FRIDAY SEPTEMBER 2, 1988

1. DISCUSSION: HOT AND VERY DRY HIGH PRESSURE WILL CONTINUE OVER AREA NEXT 2-3 DAYS AT LEAST. LIGHT WIND PATTERN. VERY LOW HUMIDITY.

2. FOR THE FIRST BURN PERIOD...THIS AFTERNOON
   A. WEATHER...MOSTLY CLEAR
   B. CWR... ZERO
   C. TEMPERATURE...MAX...5500 FEET 88 8000 FEET 75
   D. HUMIDITY... 10 TO 20 PCT.
   E. WIND..EYE LEVEL... SLOP TYPE 2 TO 8..NE TO SE 5 TO 15 RIDGES AND THROUGH SOME PASSES.

3. FOR THE SECOND BURN PERIOD...TONIGHT
   A. WEATHER...MOSTLY CLEAR
   B. CWR... ZERO
   C. TEMPERATURE.. GOOD COOLING BOTTOMS..FAIR SLOPES. MIN 30 TO 40. 50S UPPER SLOPES WITH GOOD THERMAL BELT CONDITIONS.
   D. HUMIDITY..FROM 60 PCT BOTTOMS TO 35 TO 45 SLOPES/RIDGES
   E. WIND...EYE LEVEL... LIGHT SLOPE TYPE..SE TO E 5 TO 10 RIDGES.

4. OUTLOOK FOR FOLLOWING BURN PERIOD...SATURDAY LITTLE CHANGE INDICATED AT THIS TIME.

SMOKE DISPERSION FORECAST...DISPERSION FAIR TO GOOD TODAY. MIXING ABOVE MOUNTAIN TOPS THIS AFTERNOON WITH TRANSPORT WINDS NE TO E 5 TO 10... DISPERSION FAIR TO POOR TONIGHT AND FAIR TO GOOD AGAIN SATURDAY.

The inversion lasts until noon again, but the crew mops up effectively along new line. The original south line in the Grouse Creek area is mopped in 200 feet. The new line is being improved by additional tree felling and mop up is projected to be 50% complete or 100 feet in.

Recon at 1800 by Bunnell indicates that the fire has backed up to the Chinese Wall and entered the head of South Fork of Lick Creek. Bunnell develops a rest and relaxation (R & R) schedule, updates the cost matrix for the fire, and meets with Smith to discuss cost and strategy. They decide to keep things going and replace the Helena IH crew with 8 jumpers from the Canyon Creek Fire. They will release the jumpers when the Flathead IH crew returns.

Spots along Frazier Creek and north of Route Creek heat up as the day wears on. A helicopter attacks the spots north of Route Creek with water drops, but no action is taken on Frazier Creek. The fire becomes very active on the northwest flank, from Lookout Mountain to Rabbit Butte. It moves high into the South Fork of Lick Creek drainage and conditions are right for it to burn all evening.

BENCHMARK RAWS 9/2/88

TIME	READING
1446	MAX TEMPERATURE 82 DEGREES
1446	MIN R/H 16%
1246-1746	MIN 1 HR 4%
0646	MAX R/H 70%

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
0910	40°	78%	14%	CALM E	CLEAR AT BIGGS CREEK CAMP, ELEVATION 5100'
1010	50°	48%	9%	1 MPH N	SAME
1210	68°	28%	6%	LIGHT ?	SAME
1400	82°	19%	3%	LIGHT ?	SAME

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
0800	9-13 MPH SE	CLEAR	
1415	4-8 MPH SW	CLEAR	

The fire perimeter is 30,453 acres.

DROUGHT INFORMATION NATIONAL WEATHER SERVICE, BILLINGS, MT 2:00 PM MDT FRIDAY SEPTEMBER 2, 1988

DROUGHT INFORMATION FOR THE BILLINGS FIRE WEATHER DISTRICT.

THE FOLLOWING TABLES SHOW THAT THE PAST 12 MONTHS (SEPTEMBER 1987 THROUGH AUGUST 1988) WERE GENERALLY DRIER THAN THE DUST BOWL DAYS OF THE 1930'S.

LOCATION	*PRECIPITATION*		
	1933-34	*1935-36*	*1987-88*
BILLINGS, MT	8.89	8.75	7.36
MILES CITY, MT	6.20	6.11	3.35
GLASGOW, MT	8.29	7.09	6.61*
HAVRE, MT	9.80	7.17	4.64
GREAT FALLS, MT	13.27	8.28	9.40
HELENA, MT	8.47	9.51	7.63

THE YEARS OF 1933-34 AND 1935-36 WERE SELECTED BY THE AUTHOR. ONLY BILLINGS AND MILES CITY RECORDS WERE EXAMINED AT LENGTH AND THE THREE YEARS OF COMPARED DATA WERE THE DRIEST ON RECORD IN THIS CENTURY.

FOR ALL OF THE DISTRICT EXCEPT ZONE 109 AND THE HIGHLINE PORTION OF ZONE 112 THE PERIOD MAY THROUGH JULY 1988 WAS THE DRIEST YEAR COMPARING THE YEARS 1931 THROUGH 1988. FOR ZONE 109 AND THE HIGHLINE PORTION OF ZONE 112 THE DRIEST PERIOD MAY THROUGH JULY OCCURRED IN 1960.

MAY THROUGH JULY OF 1988 WAS THE HOTTEST FOR THIS PERIOD FOR MOST OF THE DISTRICT COMPARING YEARS 1931 THROUGH 1988. FOR THE HIGHLINE FROM MALTA WEST THE HOTTEST MAY THROUGH JULY OCCURRED IN 1936.

*OTHER EXTREMELY DRY YEARS SEPTEMBER THROUGH AUGUST FOR GLASGOW

1934-35	7.37 INCHES
1936-37	6.25 INCHES

9/2/88 1650 - The fire reaches higher and higher in Grouse Creek. W. Jaeger, Jr. Photo

9/3/88 Saturday

The inversion lifts early and early bucket work is centered around the Stevens and Barker camps in Biggs Creek. Bunnell orders a cable in the Barker camp removed as it is a helicopter hazard. Maryott is released to Kalispell for R & R. At 1230, on his flight home, he checks the head of Lick Creek. He reports a lot of activity, but the fire has not exceeded the wall or made a major move downslope.

A helicopter starts to shuttle the Helena IH crew out for 2 days R & R and jumpers in. Bunnell develops a specific contingency plan and objectives.

The fire in the Frazier Creek area starts to move up hill, but people can not be put in there because of the commitment of the helicopter to transport troops. At 1620 the fire in the South Fork of Lick Creek makes a major move to the east along the base of Lick Mountain and spots well down the drainage.

BENCHMARK RAWS 9/3/88

TIME	READING
1546	MAX TEMPERATURE 82 DEGREES
1546-1846	MIN R/H 24%
1346-1846	MIN 1 HR 5%
0746	MAX R/H 89%

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
0900	41°	78%	14%	CALM	CLEAR - BIGGS CREEK FIRE CAMP, ELEVATION 5100 FEET

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
0800	8-10 MPH GUSTS TO 15 E	CLEAR	
1400	0-4 MPH GUSTS TO 9 E-S-W	CLEAR	

The fire perimeter is 32,813 acres.

GATES PARK - UNPLANNED IGNITION PRESCRIBED FIRE
September 3, 1988

Contingency Plan

1. Map of fire perimeter with behavior and size indicated is included.

   The fire has taken on different shape and areas of emphasis starting on 8/21/88. Prevailing winds have consistently shifted from the southwest to a northwest direction. The effect of this wind shift has changed the back of the fire (southeast flank) to the head of the fire and the previous head (north flank) to the back of the fire. The fire's shape and direction strongly shows the influence of this new wind pattern. The total fire perimeter as of 9/2/88 is estimated at 31,808 acres. Through the last 10-day period, significant interior burning has occurred that has not increased the area affected. Direct attack on threatened flanks has been very successful.

2. Approximately 3.75 miles of direct hand line has been constructed, burned out and held from the North Fork Sun River east to Trail #109 and south past the intersection of Grouse Creek and the east to rocky scree at the Horse Hill area. A secondary line has been constructed as a south flank back up from Trail #109 south to Bridge Creek and then east up Bridge Creek to the base of Mule Hill. This line was hand constructed and blasted with watergel explosives on 8/26 and 8/27 as backup to the Grouse Creek line. An additional hand line has been constructed and held, west of the river at the confluence of Biggs Creek and the North Fork Sun River. This line has been reinforced with water and mop up is now underway 2 chains in from the perimeter on all flanks involved in this area.

General Strategy

Continue to direct attack any spot south of existing held line. Attack with personnel and helicopter bucket any spot developing south of Grouse Creek east of Horse Hill. If Grouse Creek line is exceeded, prepare backfire with Mark III dispenser from the ridge (east and west) between the Grouse Creek line and the secondary line in Bridge Creek. Continue to hold all existing line on the south east flank and develop line from the river to the west to where the fire crosses Rock Creek.

Fire has aggressively backed up over the Rabbit Butte ridge on the north flank and entered the South Fork of Lick Creek. In 9/2, this fire developed a significant down canyon run to the east to the base of Lick Mountain. This drainage has not been analyzed in depth at this time, but immediate plans will be developed to reduce the intensity and spread of this fire if it is determined that it threatens the mouth of the Route Creek area.

a. *Division Breakdown*

Grouse Creek Area
The proposed burnout of the confluence of Biggs Creek and the Sun was not completed. On the evening of 8/22, the fire was driven across Biggs Creek to the east under the influence of a strong northwesterly flow. Direct helicopter bucket operations and the hand crew working the Lynx Creek flank could not contain it. The tactical team was notified and reconvened in Choteau on 8/23 at 0600. The result of this fire movement required the direct lining of the fire in the Sulphur Creek drainage by two Category I crews on 8/23. This line did not hold and subsequently burned several hundred additional acres in a southeasterly direction in the Sulphur and

Horse Hills areas. Line was developed, by hand crews, improved, burned out and held by the 26th, as well as the secondary line south of the fire in Bridge Creek.

Specific Strategy

Continue to reinforce and mop up line in the Grouse Creek area with District personnel. Burn out the bottom of Grouse Creek east of Horse Hill to the eastern extent of the fire if fire does not back downslope by 9/4. Provide direct attack to all spots south of Grouse Creek above Horse Hill by both hand crews and helicopter bucket support as well as any spot developing south of existing held line along the entire south perimeter.

Extend the constructed line with water support to the western portion of the line adjacent to the Biggs Creek. Maintain a minimum of one tactical (mobile) crew with helicopter support on the south flank with adequate ground water systems. Continue to mop up south flank 2 chains in from perimeter where ground water is available. Use one Mark III and two WATERBUGS systems to cold trail or support line construction on the Rock Creek line.

Route Creek Area

Lines constructed by hand crews and blasting on 8/13 have essentially held. Fire intensity on this flank continues to be inconsistent and light compared to all other areas. Crews were pulled from this area on 9/1 to support the line construction on the south flank. Wrong Creek Cabin was reinforced at this time with additional work on structure protection accomplished. This structure is protected by reflective shields, natural fuel buildup removal and Mark III water system.

Fire is now flanking this low ground on the west flank at a high elevation in the South Fork of Lick Creek. This fire is now in position to pose a significant threat to Wrong Creek and the Route Creek areas if a significant west to southwesterly windflow pattern becomes reestablished. All available options to reduce intensity of rapid fire movement east in the Lick Creek drainage will be analyzed in an attempt to delay or subvert entry into the Route Creek drainage at the confluence of the North Fork Sun River area. Continued intensity reducing measures will continue at the mouth of Route Creek when personnel safety can be assured. Beartop Lookout still provides adequate observation when the smoke inversion rises. This occurs most often between 1200-1500 hours. Air surveillance will be utilized, when available, to monitor this fire, but up to this writing that has not materialized from local sources.

3. Resistance to control: High (Fuel Model G).

4. Camps, water sources, helispots, access areas; ID on map.

5. Required personnel and resources to contain; Route Creek area: Helicopter, crew of 10 and complete Mark III water system. Grouse Creek area: Two Category I crews, helicopter and two Mark III systems and two WATERBUGS systems.

6. Constraints to suppression effort: Normal wilderness constraints.

7. Facilities ahead of fire: Gates Park Guard Station, Wrong Creek Guard Station, Cabin Creek Guard Station, packbridge across North Fork of the Sun River, outfitter camps.

8. *Facility Protection*

Gates Park Building - A Mark III pump and hoselay is setup around the facility using Gates Creek as a water source. In addition, a fire shelter has been deployed over the Gates Park roof to protect the structure from fire brands. All combustible fuels (vegetation) around buildings have been removed and a strip around the facility has been burned out to prevent fire spread.

Personnel assigned to Gates Park have fire shelters, are knowledgeable of escape routes and are monitored by Beartop Lookout.

Beartop Lookout - The Lookout can be removed by helicopter. If necessary, the Lookout can move to an escape route and deploy a fire shelter. The Lookout is generally fire secure since it is located on a rock ridge.

Bridge Protection - A Mark III pump, hoselay and sprinkler system has been set up on the packbridge for the duration of the fire.

Wrong Creek Cabin - A Mark III pump with hoselay is set up around the cabin using Wrong Creek as a water source. A fire shelter has been deployed over the cabin roof to protect the structure from fire brands. All combustible fuels around the cabin have been removed.

Cabin Creek Cabin - A pump and hoselay would be set up around the cabin. A fire shelter would be deployed over the cabin's roof. Vegetation would be removed from the vicinity of the cabin.

Outfitter Camps - No action has been taken to protect outfitter camps at this point. However, if limited action can be taken to protect a camp, it will be done.

9. Watershed Protection - The North Fork of the Sun River is a major drainage of Gibson Reservoir. The Irrigation District has expressed concern that the fire's size be limited to a set acreage to prevent heavy runoffs and increased sedimentation.

The Forest hydrologist has calculated that 34,000 acres would represent a 5% water yield increase for the North Fork Sun River.

Prepared by: /s/_____
David Bunnell, Tactical Team Leader

9/4/88 Sunday

SPOT FORECAST FOR...GATES PARK 12:35 PM MDT SUNDAY SEPTEMBER 4, 1988

1. DISCUSSION: HOT-DRY AIR MASS TODAY AND MONDAY. NOT QUITE AS STRONG OF A WIND PATTERN TODAY. SHIFT OF HIGH PRESSURE TO EAST AND SOUTH LIKELY TO START ON MONDAY AND LOOKING FOR FRONTAL SYSTEM PASSAGE TUESDAY AND WIND TUES. STAY TUNED TO GENERAL FIRE WEATHER FORECASTS CLOSELY...

2. FOR THE FIRST BURN PERIOD...THIS AFTERNOON
   A. WEATHER...SUNNY WITH SMOKE LIFTING.
   B. CWR... ZERO
   C. TEMPERATURE..MAX 5000 FT 85... WITH 78 AT 8000 FEET.
   D. HUMIDITY... MINIMUM 10 TO 20 PCT.
   E. WIND..EYE LEVEL...MOSTLY SE TO S 4 TO 10...E TO SE 10 TO 15 RIDGES. CANYON WINDS STRONGER THAN NORMAL UNDER SE LOW LEVEL WIND FLOW.

3. FOR THE SECOND BURN PERIOD... TONIGHT
   A. WEATHER... CLEAR OR SMOKEY
   B. CWR... ZERO
   C. TEMPERATURE... FROM 40S BOTTOMS TO 50S SLOPES/RIDGES
   D. HUMIDITY...STILL POOR RECOVERY... 35 TO 45 PCT RIDGES/SLOPES...70 PCT BOTTOMS.
   E. WIND..EYE LEVEL... SE TO E 3 TO 6 MPH... 15 HIGH RIDGES.

4. OUTLOOK FOR FOLLOWING BURN PERIOD...MONDAY NOT MUCH CHANGE EXCEPT WINDS SE TO SW 5 TO 15 MPH WITH S TO SW 15 GUSTY RIDGES LIKELY INCREASING UP TO 20 AT TIMES LATE IN DAY.

SMOKE DISPERSION...FAIR TODAY WITH MIXING TO ABOUT 10 TO 11 TSD FEET WITH FAIR TO POOR TONIGHT...FAIR AGAIN MONDAY.

The crew continues to mop up and use hose water deployment on the south flanks. The Minnesota helitack crew develops a hose lay at Wrong Creek cabin by punching holes in old 1 1/2" hose and stringing it around and over the cabin. The crew spends the day there, watering down the area west of the cabin to increase the moisture content as much as possible. The jumpers are put on a spot above Horse Hill to mop it up with water drops and a pyramid tank with water bug pump. The fire starts to run north of Sulphur Hill again, but the burn out in front of it appears to work. A heavy smoke inversion never fully lifts from the valley all day.

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
0900	42°	79%	14%	CALM	CLEAR

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
0830 1400	5 MPH SW 0-3 MPH GUSTS TO 5 SW	CLEAR CLEAR	

The fire perimeter remains at about 32,813 acres.

9/5/88 Monday

NEWA RELEASE--WEATHER THREATENS TO WORSEN FIRE CONDITIONS

Missoula, MT. -- Prolonged hot and dry weather conditions have resulted in critically dry fuels throughout the forest, park, and rangelands of the Northern Rocky Mountains. A potential change in the current weather system has prompted Federal and State fire management officials, working in conjunction with the Weather Service, to issue a public alert for possible extreme fire behavior conditions on existing as well as on any new fires.

According to Jim Mann, USDA Forest Service Director of Aviation and Fire Management in Missoula and speaking on behalf of the officials, a weather system could result in potentially high winds and extreme burning conditions in Idaho, Montana, and the Greater Yellowstone Area. This change in burning activity appears to be most likely to occur between late this afternoon and Wednesday.

Mann stated that if the weather frontal passage develops as feared, winds could result in sustained runs on existing wildfires.

Officials from all land managing agencies are asking for the continuing cooperation of everyone to use caution and help prevent any new fires. Mann also said that firefighters and other people working on existing fires are being advised to stay alert for changing weather conditions and erratic fire behavior during this critical time.

RICO FIRE BEHAVIOR SERVICE CENTER, 9/05 am

--FIRE BEHAVIOR WARNING --

A DRY COLD-FRONT IS EXPECTED TO ARRIVE IN OUR AREA THIS AFTERNOON/EARLY EVENING FROM THE PACIFIC COAST. STRONG WINDS FROM THE SOUTHEAST-SOUTHWEST WILL PRECEDE THE FRONTAL PASSAGE, THEN SHIFT TO SUSTAINED MODERATE WINDS FROM THE WEST. WITH FUEL MOISTURES AT CRITICALLY LOW LEVELS BECAUSE OF THE PERSISTENT HIGH PRESSURE RIDGE AND SUBSIDENCE INVERSION, THE FIRE DANGER IS EXTREME. THE APPROACHING COLD-FRONT COULD TRIGGER EXTREME FIRE BEHAVIOR RESULTING IN RUNNING CROWN FIRES AND LONG DISTANT SPOTTING IN FOREST FUELS. FIRES OF THIS NATURE HAVE HISTORICALLY BURNED TO THE NORTHEAST DURING SHORT (4-10 HRS.), CATASTROPHIC BURNING PERIODS. VERY LITTLE, IF ANY MOISTURE IS EXPECTED WITH THIS SYSTEM. THERE ARE NO INDICATIONS THAT THIS WILL BE AN END OF THE SEASON EVENT.

THE NORTHWESTERN PORTION OF THE REGION WILL RECEIVE THE INITIAL BRUNT OF THE FRONT STARTING LATE THIS AFTERNOON. THE PROBABILITY OF A SHORT/ CATASTROPHIC BURNING PERIOD IS GREATER IN THIS AREA. FRONTAL INFLUENCE IS EXTREME SW MONTANA AND THE YELLOWSTONE ECOSYSTEM WILL BE ON TUESDAY AND WEDNESDAY. BE SURE TO CONSULT YOUR LOCAL, OR INCIDENT FIRE WEATHER FORCASTER FOR INFORMATION CONCERNING YOUR LOCAL STATION.

1200: Maryott returns from R & R to the base camp. He moves the crew north to extend line construction along the perimeter to Rock Creek west of the river. He plans to support this line with water pumped from the lily pond south of Rock Creek. The entire Flathead IH crew works on this new line construction while 8 jumpers and 8 district people continue to mop up on the existing south flank line using hand tools and some pumps. A heavy helicopter is ordered from the Canyon Creek Fire with a 1700 arrival time. The helicopter will be used to make water drops in the Lick Creek area.

1300: The weather changes, showing that the new weather front has arrived.

1430: The fire heats up at many places in the interior and makes another run at the Gates Park cabin which is held off by helicopter bucket drops. The helitack crew starts the pump at the Gates pack bridge.

1600: The helitack crew makes final preparations at the Wrong Creek cabin. They pull everything out of tac shed that is not needed for firefighting and cabin protection. Water drops are made on spots at the mouth of Route Creek and the north side of Frazier Creek. The heavy helicopter has mechanical problems leaving Augusta and is down with a tail rotor fracture.

At 1730 Bunnell recons the fire from the air. The fire is very active everywhere. Frazier Creek appears secure as the fire is is burning back into itself. In Route Creek the line is holding. The fire is very active again in the northwest under the Chinese Wall along the Continental Divide around Lick Creek. The fire has moved further around the north side of Lick Mountain and down Lick Creek. The wind and humidity are such that the fire might be active all night.

Four additional District people are taken from their trail work and are moved to Gates Park cabin to hold the hose lay area and mop up. The crews stay on the south line till dark. A lookout is posted on the east side of the river and two more in camp to monitor the fire all night long.

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
0915	42°	79%	14%	CALM	CLEAR - BIGGS CREEK FIRE CAMP

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
1515	3-6 MPH GUSTS TO 10 W	.1	

The fire perimeter is 34,237 acres.

9/6/88 Tuesday

By 0500 all monitors are reporting heavy activity. The south line needs some work because of hot spots. What had not been burnt during the burnout, burns last night, but the line holds. One helicopter is down again with a timed out main rotor mast. Bunnell orders long ranger helicopter as replacement. Great Falls dispatch indicates none available. Bunnell ordered Flathead helicopter from Kalispell dispatch. By the time it and the other helicopter arrive at the Our Lake helibase, the wind and turbulence are so strong that the helispot is moved to Hannon Gulch. From Hannon Gulch the helicopters can fly up the North Fork of the Sun River avoiding the upper air. The two helicopters are needed to ferry the crews in and out.

RICO FIRE BEHAVIOR SERVICE CENTER, SEPT. 6, 1988 AM---FIRE BEHAVIOR WARNING

THE DRY COLD-FRONT THAT HAD BEEN PREDICTED IS STARTING TO TRACK INTO THE REGION. ON A LINE THIS MORNING SPOKANE-PENDLETON, SHOULD BE ON A LINE BETWEEN KALISPELL-LEWISTOWN BY LATE MORNING. EXPECT IT TO MOVE AT 25 MPH AND BE IN OUR SOUTHERN ZONES BY MID AFTERNOON. CURRENTLY THERE IS NO INDICATION OF A REVERSE WIND PROFILE, JUST INCREASING WINDS WITH INCREASING ELEVATION. 0600 SOUNDINGS FROM SPOKANE THIS MORNING HAD 25 MPH SW WINDS AT 2000', 20 MPH SW WINDS AT 5000', 35 MPH SW WINDS AT 8000', AND 40 MPH SW WINDS AT 15,000'. LOOKOUT STATIONS ON THE WEST SIDE OF THE KOOTENAI NF REPORTED 30-35 MPH SW WINDS, AND ALL WAS CALM BELOW. CALM ON THE CLEARWATER AND NEZ PERCE NF'S. WINDS WILL BE SHIFTING TO THE WEST FOLLOWING PASSAGE OF THE FRONT, FREE AIR WINDS WILL BE 25 MPH IN THE WESTERN ZONES AND 25-30 MPH IN THE EASTERN ZONES OF THE MISSOULA WEATHER FORECASTING AREA.

1025: Despite the strong upper winds, Maryott reports only a slight change in the wind at the base camp, from calm to mild, three mph winds.

1200: Winds near the base camp increased to 8 to 10 mph from the southwest, indicating that the frontal passage is surfacing. A lookout is placed at the Horse Hill helispot. The spot forecast calls for winds 3 to 5 from south.

SPOT FORECAST FOR...GATES PARK 1400 MDT TUESDAY SEPTEMBER 6, 1988

1. DISCUSSION: A DRY COLD FRONT HAS JUST PASSED THROUGH YOUR AREA OR WILL DO SO SOON. COOLER TEMPS AND WINDY CONDITIONS WILL PREVAIL FOR THE AREA THROUGH WEDNESDAY.....RED FLAG WARNING IN EFFECT FOR TODAY AND TONIGHT FOR STRONG WEST TO NORTHWEST WINDS.....

2. FOR THIS AFTERNOON
   A. WEATHER...SOME HIGH CLOUDS.
   B. CWR... ZERO
   C. TEMPERATURE.. A LITTLE COOLER..MAX NEAR 80.
   D. HUMIDITY... MIN NEAR 25%.
   E. WIND EYE LEVEL..EXPOSED RIDGES, WEST 10-20 MPH WITH GUSTS TO 30 MPH

3. FOR TONIGHT
   A. WEATHER...SOME HIGH CLOUDS.
   B. CWR... ZERO

C. TEMPERATURE... COOLER...MINS 38-45.
D. HUMIDITY...HIGHER WITH BETTER RECOVERY...MAXS 55-65%.
E. WIND..EYE LEVEL... WEST 10-20 MPH WITH GUSTS TO 35 MPH.

4. OUTLOOK FOR WEDNESDAY...A FEW HIGH CLOUDS, OTHERWISE WINDY AND COOLER. MAX TEMPS LOWER 70S.. MIN RH 30-35%, WINDS NORTHWEST 10-15 MPH WITH GUSTS TO 25... DECREASING IN THE AFTERNOON.

1400: The crew shuttle is shut down as the wind is gusting to 50 mph at Hannon Gulch.

1425: Beartop Lookout reports the fire is making a run at the lookout. Bunnell orders a retardant drop on the lookout and instructs the lookout, Walt Jaeger, to evacuate to predetermined safe area.

1500: Word comes that all tankers are grounded due to high winds.

1530: The fire sweeps north of the lookout, but the structure is not damaged. Jaeger reports that all combustible material near the lookout has burned, but he and the lookout are safe.

Maryott reports a large column north of Gates Park. Bunnell orders a fixed wing aircraft for observation, but learns from Great Falls dispatch that none are available.

1550: Tanker 10 is over the fire, but the smoke is too thick to find the lookout. The tanker is diverted to the Red Bench Fire on the Flathead National Forest and Glacier National Park.

1600: The fire starts a major run down the South Fork of Lick Creek. Portions of the south line are bumped by long range spotting from heavy interior burning in the Sulphur Creek area and in the Biggs Creek and North Fork of the Sun confluence area. There is also heavy interior burning in the Biggs Creek area.

1634: The helicopter tries to reach the Wrong Creek cabin to start pump, but wind and smoke block him out.

1640: Bunnell uses the Twin Otter to recon the fire. The Flathead helicopter is released back to the Forest for the Red Bench Fire after the crew shuttle is completed. Eight jumpers and the Flathead I.H. crew are out and the Helena I.H. crew and 4 district people are in.

1726: Bunnell reports that the fire is moving on a large front down the South Fork of Lick Creek to within one mile of the river, but that it is still on the west side. Reburning in Red Shale and Gates Creeks are adding to the intense movement. The fire is pushing out of Frazier Creek, but as anticipated, it is hung up on ridge line. Intense reburning above Sulphur Hill is pulling the fire up the south side of Biggs Creek in a long narrow run. The only thing holding on the north flank is the line at Route Creek, but the entire south line is okay!

1745: Bunnell returns to Choteau and the jumpers leave for Missoula.

1815: The south line in Grouse Creek is bumped hard by a run from the fire in Biggs Creek.

1831: Beartops weather shows a steady wind 30 to 40 mph with gusts to 50 mph and relative humidity of 14%.

2000: The night plan is completed. Lookouts will be posted all night, reporting hourly from Gates Park, the south line, base camp, and Beartop Lookout. Two crews will patrol outside the Wilderness in the South Fork of Deep Creek and the Middle Fork of Teton River.

2008: A special weather warning is broadcast regarding reverse wind profile and the promise of continued heavy wind. There are gusts up to 20 mph at Grouse Creek, but all lines are holding.

2100: Beartop Lookout reports heavy fire on south side of Biggs Creek moving east.

2105: Dave Kelly reports no fire over the top in South Fork Deep Creek. Every hour, monitors report the progress of the fire and weather conditions to Choteau, but it is just more of the same.

BENCHMARK RAWS 9/6/88

TIME	READING
1346	MAX TEMPERATURE 81 DEGREES
1746-1846	MIN R/H 11%
1746	MIN 1 HR 3%
0646	MAX R/H 71%

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
1230	76°	25%	5%	3-5 S	ELEVATION 5600'
1715	77°	12%	4%	10-15 S	GUSTING TO 25
1835	73°	13%	6%	3-5 S	
1955	68°	15%	7%	CALM	
2023	69°	16%	8%	10 N	GUSTING TO 20
2100	66°	19%	8%	2-5 N	

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
1410	15-20 MPH GUSTS TO 35 W/SW	.1	
1845	30-40 MPH GUSTS TO 50 W	CLEAR	
1955	20-25 MPH GUSTS TO 45 W	CLEAR	
2105	25-30 MPH GUSTS TO 40 W	CLEAR	
2155	20-25 MPH GUSTS TO 40 W	CLEAR	
2255	25-30 MPH GUSTS TO 35 W	CLEAR	
2355	15-20 MPH GUSTS TO 30 W	CLEAR	
0055	15-20 MPH GUSTS TO 35 NW	CLEAR	

Fire perimeter has increased to 42,413 acres.

The cold front of 9/6-9/7 expanded the fire to 50,000 acres. W. Jaeger, Jr. Photo

LETTER TO RICHARD LYNG FROM GREENFIELDS IRRIGATION DISTRICT
DATED:9/6/88

Mr. Richard Lyng
Secretary of Agriculture
U.S. Dept. of Agriculture
14th St. & Independence Ave. S.W.
Washington, D.C. 20250

Dear Mr. Secretary:

We are gravely concerned about the damages being caused by the Gates Park fire, a prescribed fire in northcentral Montana, and ask for your immediate attention in bringing the fire under control. The fire has entirely consumed more than 18,000 acres, over five percent of the Sun River drainage area. Successful attempts have been made to slow the fire, but it is still designated as a prescribed burn and no limits have been placed on its size. Fire conditions are horrible as far as containment is concerned and we have real fears that large areas may be consumed under the current management plan.

The water supply from the Sun River drainage has been fully developed. Enclosed is a map with data on the Sun River Irrigation Project. The Federal Government has invested over $26 million in the development of this Project since 1905. More recently, there has been at least $20 million invested in on-farm water conservation practices. These investments have been highly successful in creating a very stable economy in the area which has not been jeopardized even by the serious drought conditions we are now experiencing. It seems reasonable to take this development into consideration when managing a prescribed burn in its exclusive water supply area.

The most significant impact on the Project will be the late-season deficiency of water brought about by accelerated runoff from the burn areas. We have reservoir storage for only 40% of our actual needs and so the sustainment of flows into July is very critical. Average July runoff amounts to 79,000 acre-feet for the Sun River drainage and a 10% influence from the effects of this fire, for instance, could shorten the irrigation season by one week and result in approximately $900,000 crop losses annually.

We have been listening attentively to the Forest Service in their explanation of the advantages to the let-burn policy and have respect for the concept. The problem, however, is that it sets no limits, and it is conceivable that our entire watershed could be consumed in a single year under this policy. We were unsuccessful in reaching a compromise with the local offices of the Forest Service for a burn limit of 12,000 acres, and since it now exceeds 18,000 acres and is very vulnerable, we strongly request that you remove the fire from the prescription status, and promptly contain it.

Sincerely,

Jerry Nypen
Manager

JN/ps
Encl: Map w/data

Reply to: *

Date: Sept. 14, 1988

Dear Mr. Nypen:

Thank you for your letter of September 6, 1988. We are very concerned with any potential for damages from the Gates Park fire. We recognize the importance and investment of the Sun River Irrigation Project, and we intend to do everything reasonable to protect this investment.

Your primary concern with the effects of the fire as expressed in your letter is clearly with maintaining current late-season runoff. Present research indicates that late-season runoff would actually increase as a result of fires. You can actually expect additional runoff in July (and other months as well) over the next several years, as a result of the Gates Park fire. A review by the best available researchers indicates this increase, although the amount of late-season increase is not well documented.

The reason for this increased late-season runoff is that trees use large amounts of water that would otherwise flow into the streams. When the trees are burned, this source of evapotranspiration is removed, and the seepage of water from the subsurface into the stream channels is increased. This situation can even be evident in some cases within a few days of the fire, by previously dry draws beginning to flow some water and by the appearance of new springs in the area of the burn.

We recognize that there are possible adverse effects of the fire to consider. Sediment is the primary adverse effect and can greatly increase if an intense rain storm should happen in the next year or so. Peak flows from snowmelt are also increased and come earlier because the tree cover has been removed. Gibson Reservoir is able to restrict these adverse effects, although the full storage capacity is presently used. Essentially all of the snowpack is gone by July even now; advancing the date of peak snowmelt will not affect streamflow in July. Some increases in flow will come in July in future years because much use of water by trees has been eliminated.

Since September 7, suppression actions have been initiated to halt the spread of the fire. We expect to contain the fire within the existing perimeter boundary.

9/7/88 Wednesday

0100: Beartop Lookout reports that the fire has spotted into Miners Creek on the north side of Biggs Creek.

0435: Kelly Hirsch patrolling the Route Creek area reports that fire has not entered Route Creek and fire is still well west of Wapiti Ridge. Bunnell calls both wilderness patrols in for the night.

0600: Bunnell inquires as to the availability of the heavy helicopter for water drops on the north flank and in the Biggs/Grouse Creek area and of MAFFS (C-130) retardant planes for the north flank. Great Falls dispatch responds that the heavy helicopter is still down, but the retardant request will be added to the waiting list. (NOTE: On the night of the 6th the Canyon Creek Fire to the south has expanded some 180,000 acres burning out onto the prairie threatening several ranch homes and buildings.)

SPOT FORECAST FOR...GATES PARK 920 AM MDT WEDNESDAY SEPTEMBER 7, 1988

1. DISCUSSION: BRISK WESTERLY FLOW OVER AREA TODAY AND THURSDAY WITH COOLER AIRMASS.

2. FOR THE FIRST BURN PERIOD...TODAY
   A. WEATHER...PARTLY CLOUDY...FEW SPRINKLES
   B. CWR... ZERO
   C. TEMPERATURE..FROM 75 BOTTOMS TP 60S HIGH ELEVATION.
   D. HUMIDITY... MINIMUM 23 TO 35 PERCENT
   E. WIND..EYE LEVEL...WESTERLY 8 TO 16...20 TO 35 AT TIMES RIDGES AND WESTERLY EXPOSED SLOPES. WINDS ERRATIC NE TO SE EXPOSURES.

3. FOR THE SECOND BURN PERIOD... TONIGHT
   A. WEATHER... CLEAR TO PARTLY CLOUDY...SMOKEY BOTTOMS
   B. CWR... ZERO
   C. TEMPERATURE... MINS FROM 40S BOTTOMS TO 25 TOP
   D. HUMIDITY...MAX 70S BOTTOMS AND 54 PCT SLOPES/RIDGES
   E. WIND..EYE LEVEL...VARIABLE 2 T0 8 WITH WEST TO NORTHWEST 10 TO 20 GUSTY RIDGES...UPPER ELEVATION WEST TO NORTHWEST EXPOSED SLOPES.

4. OUTLOOK FOR FOLLOWING BURN PERIOD... THURSDAY PARTLY CLOUDY...SMOKE IN BOTTOMS IN MORNING. TEMPERATURES LITTLE CHANGE. HUMIDITY MIN 20S AND 30S. WINDS VARIABLE 3 TO 8 WITH 10 TO 20 UPPER SLOPES

0922: A helicopter reconning the fire reports that the Wrong Creek cabin has burnt.

1030: A crew, helped by helicopter water drops, finishes lining a spot in the Rock Creek area. Word comes that the retardant ordered for north line does not rate in priority, but the fire advance to the east has already stalled because the fire cannot exceed Wapiti Ridge in force. Isolated spots over the ridge and two spots in the mouth of Route Creek are hit by helicopter bucket drops. The fire is backing slowly north into 15 mph northwest wind, but its advance east toward Route Creek appears blocked by Wapiti Ridge along a four mile front.

1420: Bunnell orders a fixed wing aircraft from Great Falls Dispatch to recon the fire, but none can be found.

1730: Bunnell calls Flathead Dispatch and secures an aircraft. Winds, gusting to 50 mph are to heavy to fly back to Hannan helibase. Maryott tries to recon a large column reported north of Route Creek, but is turned back by heavy wind and smoke.

1910: The south line along Grouse Creek is by 15-20 mph winds and gust to 35 mph.

2000: Bunnell, reconing the fire, reports that the large column north of Route Creek is an insignificant burnout of about 200 acres in the bottom of Monroe Creek on north end of Wapiti Ridge. He feels that some spotting high in Biggs Creek on south side and a spot a mile above that may need some early attention with the helicopter bucket. However, Maryott reports that it is to rough to fly now, so it must wait till tomorrow. The fire is very hot, but makes no significant movement eastward.

At 2100 Forest Supervisor Gorman calls Bunnell to inform him that because of the Governor's state wide closure due to extreme fire danger, the Gates Park Fire has been declared a wildfire and suppression action should commence immediately. Bunnell will be the Incident Commander. All crews are on the south lines till dark with the same all night lookouts, patrol procedures and reports as last night. At 2400 the District completes the preliminary EFSA (see Appendix). Alternative A is selected as the suppression action.

GATES PARK FIRE - SPECIFIC PLAN OF CONTROL

1. Continue to hold existing developed line on the south flank. Mop up 4 chains in from perimeter to reduce threat of unburned areas affected by the threat of north winds. Direct attack with bucket isolated spot in the head of Biggs Creek and any others that show up south of Grouse Creek.

2. Extend hand constructed line to the west, from where the existing line ties into Rock Creek, to the top of Goat Ridge. This line is required to reduce the treat of fire backing into the prevailing SW wind into Rock Creek on a wide irregular front (±5 Miles).

3. Develop a continues retardant line with MAFFS trail drops on the head of the fire from the north end of Wapiti Ridge west and north, across the head of the fire, through the mouth of Monroe Creek and west to the ridgeline north of the 7-up drainage.

4. Direct attack isolated spots on the east side of Wapiti Ridge by bucket operations and cool with water and retardant, the existing line from the mouth of Route Creek south to Frazier Creek will require periodic retardant and water to reduce intensities at the mouth of Route Creek. This area should *not* be manned until the ongoing threat of a rapid crown fire is diminished, to the level that personnel can safely and effectively re-establish a control line, reinforced by ground water systems, in this area.

5. Periodic direct attack on strategic portions of the line will continue to be important factors in the eventual control of this fire. The tactical team leader and operations supervisor, will evaluate and prioritize these areas on a constant basis.

BENCHMARK RAWS 9/7/88

TIME	READING
1646	MAX TEMPERATURE 62 DEGREES
1646	MIN R/H 26%
1146-1746	MIN 1 HR 5%
0746	MAX R/H 41%

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
0013	64°	33%	6%	1-5 NW	
0800	53°	38%	11%	2-5 E	GUSTING TO 10; PARTLY CLOUDY 6000 FT.
0905	52°	37%	10%	2-5 W	SAME AS ABOVE
1000	52°	42%	11%	2-5 NW	SAME AS ABOVE
1045	49°	44%	11%	? NNW	SAME AS ABOVE
1200	57°	30%	9%	5-7 ?	GUST TO 10
1300	60°	26%	6%%	5-7 NW	GUST TO 10; CLOUD COVER .3
1405	60°	26%	6%	5-7 NW	GUST TO 35; CLOUD COVER .3
1500	63°	25%	6%	2-7 NW	GUST TO 15; CLOUD COVER .3
1800	56°	33%	9%	2-5 W/NW	GUST TO 10-15
1950	55°	29%	9%	3-6 S	

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
0805	10-15 MPH GUSTS TO 20 MPH NW	.5	
1135	10-15 MPH GUSTS TO 25 MPH W	.6	
1400	8-12 MPH GUSTS TO 20 MPH W	.3	
1945	20-25 MPH GUSTS TO 35 MPH W		

The fire perimeter is 47,246 acres.

Heavy smoke near Route Creek. W. Jaeger, Jr. Photo

9/8/88 Thursday

At 0600 Bunnell orders MAFFS retardant units thru Great Falls dispatch. They are to begin dropping when visibility permits and a lead plane is available. The plan is to reduce the north spread by developing a MAFFS retardant line, by trail drop, from the north end of Wapiti Ridge west, to the main ridge north of Seven Up Creek. At the same time a medium or heavy helicopter is ordered through Canyon Creek Fire Air ops to replace heavy helicopter originally ordered.

At 0945 the Canyon Creek Fire provides a Bell 205 helicopter with bucket. The helicopter flies 4 people into Biggs Creek at the mouth of Miners Creek to develop a water source. Then it begins bucket operations on the highest spot on the Biggs Creek side of the Grouse Creek saddle, west of the Wilderness boundary. Maryott recons the north end of fire to verify the loss of the Wrong Creek cabin. At the same time the other helicopter drops water on a couple of spots on east side of Wapiti Ridge.

SPOT FORECAST FOR...GATES PARK 10:45 AM MDT THURSDAY SEPTEMBER 8, 1988

1. DISCUSSION: HIGH PRESSURE AT THE SURFACE AND LIGHTER WIND FLOW PATTERN TODAY. AIR MASS STILL VERY DRY. HIGH PRESSURE HOLDING FRIDAY.

2. FOR THE FIRST BURN PERIOD...THIS AFTERNOON
   A. WEATHER...MOSTLY CLEAR
   B. CWR.. ZERO
   C. TEMPERATURE..MAX 70 AT 5500 FEET TO 58 AT 8000 FEET.
   D. HUMIDITY... MIN 15 PCT.
   E. WIND...EYE LEVEL... VARIABLE 2 TO 6 MPH.. AFTERNOON WINDS WEST 15 GUSTY THROUGH PASSES AND ON UPPER SLOPES AND RIDGES.

3. FOR THE SECOND BURN PERIOD...TONIGHT
   A. WEATHER...CLEAR AND COOL AND SMOKEY.
   B. CWR... ZERO
   C. TEMPERATURE.. MIN TEMPS 30S.
   D. HUMIDITY... MAX 75 BOTTOMS.... 35 TO 50 PCT SLOPES/RIDGES.
   E. WIND..EYE LEVEL... VARIABLE 0 TO 6 MPH... OCCASIONAL W TO NW 10 UPPER SLOPES/RIDGES.

4. OUTLOOK FOR FOLLOWING BURN PERIOD... FRIDAY SLIGHTLY WARMER AND DRIER...LIGHT WINDS WITH SE TO SW 10 TO 15 AT TIMES IN EXPOSED AREAS AFTERNOON.

DISPERSION: FAIR MIXING TODAY TO SLIGHTLY ABOVE MOUNTAIN TOPS AND TRANSPORT WINDS WEST 15. DOWNSLOPE FOR LIKELY POOR DISPERSION TONIGHT AND EARLY FRIDAY...BECOMING FAIR FRIDAY AFTERNOON.

At 1300 the retardant operation begins. This initial effort appears to have some success, although it is suspended at 1600 because smoke forced higher drops which the fire moved through easily.

Gorman, Smith, Bunnell and District staff meet at Choteau to discuss objectives and alternatives developed in EFSA. Due to the seriousness of the Red Bench Fire on the Flathead National Forest and other critical fire problems, the Supervisor requests that Bunnell be released back to the Flathead. Bunnell will be released to the Flathead at 1200 tomorrow. George Curtis, FMO on the Rexford Ranger District, Kootenai will be his replacement's Incident Commander.

At 1700 Gorman and Bunnell fly the fire with the Teton County Commissioners. There is no major movement, but the interior of the new run in the north continues to make minor runs up the west side of Wapiti Ridge from Wrong Creek. No new spots develop that jeopardize the Wilderness boundary.

ERC at Gleason Fire Weather Station reaches 66 and thousand hour fuel moistures drops to 10%. This is the lowest fuel moisture and highest ERC recorded from this station in 1988. The 10 year average ERC for this date is 25.

BENCHMARK RAWS 9/8/88

TIME	READING
1546, 1746-1846	MAX TEMPERATURE 68 DEGREES
1346-1546	MIN R/H 21%
1446-1646	MIN 1 HR 4%
0746	MAX R/H 80%

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
0900	44°	24%	8%	CALM	
1025	52°	35%	8%	2-7 NE	BIGGS CR. CLEAR
1100	56°	26%	7%	2-7 E	BIGGS CREEK
1200	61°	24%	5%	2-7 SE	SAME
1310	65°	21%	5%	2-7 SE	SAME
1405	66°	16%	4%	2-5 SE	SAME
1502	66°	16%	4%	2-4 NW	SAME
1601	67°	18%	5%	2-6 NW	SAME
1700	65°	22%	6%	2-7 NW	BIGGS CREEK; CLOUD COVER .1
1800	65°	22%	8%	2-7 NW	BIGGS CR; CLEAR

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
0800	8-12 MPH GUSTS TO 18 MPH NW	CLEAR	
0900	2-5 MPH NE	CLEAR	
1000	3-8 MPH GUSTS TO 15 MPH W	CLEAR	
1100	3-8 MPH GUSTS TO 10 MPH W	CLEAR	
1200	5-8 MPH GUSTS TO 14 MPH W	CLEAR	
1300	3-8 MPH GUSTS TO 16 MPH W	CLEAR	
1400	8-12 MPH W/SW	CLEAR	
1500	2-7 MPH W	.1	
1600	8-12 MPH GUSTS TO 23 MPH W/SW	CLEAR	
1700	10-15 MPH GUSTS TO 23 MPH W	.1	
1800	10-15 MPH GUSTS TO 23 MPH W	.1	
1900	5-10 MPH GUSTS TO 18 MPH W	CLEAR	
2000	10-15 MPH W	.2	

The fire perimeter is 50,396 acres.

9/9/88 Friday

George Curtis arrives in Choteau at 0730 to replaced Bunnell as the Incident Commander for the Gates Park Fire. He, Bunnell, and Stiger meet for a briefing and review the EFSA and contingency plan for the fire. The Forest Supervisor had selected Alternative A which emphasizes control and direct attack on this fire. The EFSA requires that all suppression tactics lie easy on the land because of the wilderness values. It also requires that expenditures be commensurate with the weather and the general and specific strategy needed to implement the plans. At this time, it was noted that resources were limited, but that two Type I crews, District personnel, retardant, and helicopters with water dropping capability are available to keep this fire inside the wilderness.

SPOT FORECAST FOR...GATES PARK 12:05 PM MDT FRIDAY SEPTEMBER 9, 1988

1. DISCUSSION: RED FLAG WATCH...FOR FRONTAL PASSAGE AND WIND...TODAY VERY DRY AND STABLE WITH GRADUAL INCREASE IN SOUTHWEST WIND AT HIGH LEVELS. PACIFIC FRONT EXPECTED TO CROSS AREA LATE TONIGHT OR EARLY SATURDAY FOLLOWED BY UPPER LEVEL LOW PRESSURE THOUGH.

2. FOR THE FIRST BURN PERIOD...THIS AFTERNOON
   A. WEATHER..SOME HIGH CLOUDS... SMOKEY LOW ELEVATIONS...LIFTING SOME LATE AFTERNOON
   B. CWR..ZERO
   C. TEMPERATURE..MAX 60 AT 8000 FEET AND 74 AT 5000 FEET.
   D. HUMIDITY... MIN 14 TO 20 PCT.
   E. WIND..EYE LEVEL...VARIABLE 2 TO 5 MPH. S TO SW 5 TO 15 MPH CANYON WINDS...THRU SOME PASSES.. AND SW 15 TO 20 RIDGE TOPS.

3. FOR THE SECOND BURN PERIOD...TONIGHT
   A. WEATHER..INCREASING CLOUDS. SLIGHT CHANCE OF A LIGHT SHOWER.
   B. CWR... 10 PCT.
   C. TEMPERATURE..MINS 40S.
   D. HUMIDITY..MAX 60 PCT BOTTOMS AND 30 TO 40 PCT RIDGES/SLOPES
   E. WIND..EYE LEVEL... S TO SW 5 TO 15 LOWER EXPOSED AREAS WITH 15 TO 25 UPPER SLOPES AND RIDGES...

4. OUTLOOK FOR FOLLOWING BURN PERIOD...SATURDAY CHANCE FEW LIGHT SHOWERS. TEMPERATURES COOLING DURING AFTERNOON...MAX 60 TO 70 LIKELY COOLING TO 50S AND 60S AFTERNOON. HUMIDITY STARTING OUT LOW BUT LIKELY RISING TO 25 TO 35 PCT AFTERNOON. WINDS SW TO NW 5 TO 15 WITH 15 TO 30 HIGHER EXPOSED AREAS...WINDS LIKELY W OR NW AFTERNOON.

The fire did not gain any significant acreage. The same strategy that was used yesterday is repeated. Water bucket drops are made along the northeast end of the fire on Wapiti Ridge. Three retardant drops are made in the vicinity of Wrong Creek. Continuous retardant drops are made on the south end of the fire in from the west side of the North Fork of Sun River to Goat Ridge. Crews construct handline along this edge of the fire to shore up the southern perimeter in light of the expected north winds.

All 9 1/2 miles of line built on the Gates Park Fire hold. An additional crew is ordered for the next day. By afternoon, about 35 firefighters will be in place. Also, there is a possibility that two National Guard helicopters will be available to work on the fire. Their primary purpose will be to shuttle crews and gear. The plan is to continue with the retardant drops and handline construction on the south end of the fire and patrol existing southern lines as the north winds begin to enter the area. The cooler temperatures, light winds and higher relative humidities help the firefighting efforts.

BENCHMARK RAWS 9/9/88

TIME	READING
1646	MAX TEMPERATURE 78 DEGREES
1646	MIN R/H 20%
1646-1846	MIN 1 HR 5%
0746	MAX R/H 80%

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
0805	30°	70%	14%	CALM	BIGGS CREEK; CLEAR;INVERSION ELEVATION 5100 FEET
0910	39°	70%	14%	CALM	GATES PARK
0920	40°	71%	14%	CALM	GATES PARK
1005	49°	57%	10%	2-3 NE	BIGGS CREEK
1218	60°	31%	6%	3-7 W & SW	BIGGS CREEK; ELEVATION 6000'

9/9/88 Gates Park Fire. B. Lindler Photo

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
0800	5-10 MPH GUSTS TO 15 MPH SW	.1	
0900	5-10 MPH GUSTS TO 15 MPH SW	.1	
1000	5-10 MPH SW	.1	
1100	2-7 MPH GUSTS TO 10 MPH SW	.1	
1200	2-7 MPH GUSTS TO 10 MPH SW	.3	
1300	2-7 MPH GUSTS TO 10 MPH W	.4	
1400	15-20 MPH GUSTS TO 35 MPH W	.7	
1500	20-25 MPH GUSTS TO 40 MPH W	.9	
1600	10-15 MPH GUSTS TO 20 MPH W	.8	
1700	6-12 MPH GUSTS TO 18 MPH W	.3	
1800	5-10 MPH GUSTS TO 15 MPH W	.3	
1900	10-15 MPH W	.2	
2000	2-7 MPH W	.1	

The fire perimeter remains at 50,396.

9/10/88 Saturday

Light rain and snow start falling at about 0900, and by late afternoon it is snowing over most of the fire. Two National Guard helicopters arrive in Choteau and are sent to the base camp to ferry personnel and gear. One helicopter moves a 20 person Lewis and Clark Forest crew to the fire near the southern perimeter. One crew works on hot spots near Goat Ridge and Hoxsey Creek while another crew works on a hot spot across Biggs Creek. Because of the weather, retardant is not used.

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
0800 0810	37° 37°	84% 76%	16% 15%	CALM CALM	OVERCAST OVERCAST; BIGGS CREEK

SPOT FORECAST FOR...GATES PARK 1615 MDT SATURDAY SEPTEMBER 10, 1988

1. DISCUSSION...COLD WET WEATHER SYSTEM IN THE AREA WILL MOVE SOUTH DURING THE NEXT FEW DAYS AND THEN MOVE EAST. TEMPS WILL REMAIN COOL AND HUMIDITY MUCH HIGHER SO LONG AS THIS LOW STAYS IN OUR AREA. BY MIDWEEK HIGH PRESSURE IS LIKELY TO RETURN FOR DRY WARM WEATHER THEN

2. FOR TONIGHT
   A. WEATHER..CLOUDY WITH SOME OCCASIONAL SHOWERS. SNOW LEVEL 7 THOUSAND
   B. CWR... 50%
   C. TEMPERATURE.. MINS 29-38
   D. HUMIDITY... MAX 85-100%.
   E. WIND...EYE LEVEL..NORTH 10-20 MPH WITH SOME GUSTS TO 25 MPH.

3. FOR SUNDAY
   A. WEATHER..CLOUDY WITH SOME OCCASIONAL SHOWERS. SNOW LEVEL ABOUT SAME
   B. CWR... 50%
   C. TEMPERATURE... MAXS 37-47
   D. HUMIDITY...MINS NEAR 55%
   E. WIND..EYE LEVEL... NORTH 10-15 MPH WITH GUSTS TO 25 MPH.

4. OUTLOOK FOR MONDAY...SOME CLOUDS, BUT MOSTLY SUNNY AND WARMER. MAX TEMPS 50-55, MIN HUMIDITY NEAR 40% RIDGE WINDS NORTHWEST 8-12 MPH WITH GUSTS TO 15.

BENCHMARK RAWS 9/10/88

TIME	READING
1046 0946-1046 1046 1346	MAX TEMPERATURE 47 DEGREES MIN R/H 54% MIN 1 HR 11% MAX R/H 93%

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
0800	2-7 MPH NE	100%	
0900	3-8 MPH GUSTS TO 12 MPH NE	100%	LIGHT SNOW
1000	0-4 MPH N	100%	FOG
1100	4-8 MPH GUSTS TO 12 MPH N	100%	SNOW
1200	4-8 MPH GUSTS TO 12 MPH E/NE	100%	LIGHT SNOW
1300	0-4 MPH N/NE	100%	LIGHT SNOW
1405	4-8 MPH GUSTS TO 12 MPH NE	100%	LIGHT SNOW .02 SINCE 9/9 1400
1500	4-8 MPH GUSTS TO 12 MPH E	100%	LIGHT SNOW
1605	5-10 MPH GUSTS TO 20 MPH E	100%	SNOW

Snow put an end to the spread of the Gates Park Fire.

RICO FIRE BEHAVIOR SERVICE CENTER, 9/11 am

Nature turns the tide! While it is not over everywhere in the Region, we certainly got a good damping in many locations. Some good reports of early season snow in the higher elevations. Yesterday afternoon there were reports from the lookouts on the Kootenai NF of 2" of snow, Butte received 2" of the white stuff, and on the Beartooth Pass between Cooke City and Red Lodge they received 4". Also on the higher peaks around Missoula I can see a light covering of snow from outside my bunker here at AFD. Talked to Sonny Stiger (retired USFS, Rx fire specialist with MT Prescribed Fire Services, currently acting FMO on the Rocky Mtn District) yesterday afternoon at Choteau on the Lewis and Clark NF and he said it was raining and snowing on the Gates Park fire in the Bob Marshall Wilderness. The lookouts for that area have reported 8-12" of snow. On the Elk Division of the Canyon Creek fire they had to call in wreckers to pull some vehicles out of ditches as the roads turned "greasy". Other reports are filtering in.

Following is the 24 hour precipitation from the RAWS and National Weather Service stations:

Zone 101	Priest River RAWS	.02"
	Mullan, ID	.02"
	Nearby Spokane, WA	.32"
Zone 102	Fish Hook RAWS	.02"
Zone 103	Red River RAWS	.03"
	Grangeville, ID	.13"
Zone 104	Cyclone RAWS	.08"
	Kalispell, MT	.25"
Zone 105	Stinkwater RAWS	.08"
	Missoula, MT	.07"
	Hamilton, MT	.36"
Zone 106	Drummond, MT	.62"
	Butte, MT	1.08" (includes 2" of snow)
	Helena, MT	.81"
Zone 107	Bozeman, MT	.41"
Zone 108	Great Falls, MT	.70"
	Cut Bank, MT	.18"
Zone 111	Livingston, MT	.02"
Zone 112	Flat Willow RAWS	.38"
	Lewistown, MT	.16"
Zone 113	Billings, MT	.04"
Zone 114	Big Sheep RAWS	.07"
Zone 115	Badger Peak RAWS	.10"
	Broadus, MT	.01"
	Nearby Sheridan, WY	.24"
Zone 116	Hackberry RAWS	.06"

Almost the entire Region received good 1 hr fuel moisture recovery last night. Quite a change! HOWEVER DON'T FORGET THOSE LARGE FUELS. HI-PRESSURE RETURNING SOON.

Chuck Bushey
commercial 329-4850 (FTS 584)
DG RICOPLANS:R01D

9/11/88 Sunday

In the morning, Gates Park reports .47 inches of precipitation with about 3 inches of snow on the ground. Patrol Lookout, 24 miles south of Beartop, reports 8-12 inches of snow. Due to the storm and weather, retardant drops and helicopters are not used. The break in fire activity allows crews to concentrate on clearing trees and hazards from the trails within the fire perimeter. Doug Maryott is relieved as Operations Chief and returns home.

BENCHMARK RAWS 9/11/88

TIME	READING
1646, 1846	MAX TEMPERATURE 39 DEGREES
1846	MIN R/H 93%
1546	MIN 1 HR 22%
0146-1546	MAX R/H 100%

PRECIPITATION: 2446, .01; 1346, .01; 1446, .01; 1546, .03; 1646, .06; 1746, .06; 1846, .04; 1946, .04; 2046, .01

Beartop Lookout is temporarily closed.

There is no change in the fire size.

Snow comes to the high country.

9/12/88 Monday

Additional helicopters, previously ordered, transport supplies and crews to the fire. They include one light helicopter and four medium sized helicopters. On the southwest side of the fire near Hoxsey Creek, the crews mop up and construct line.

SPOT FORECAST FOR...GATES PARK 11:30 AM MDT MONDAY SEPTEMBER 12, 1988

1. DISCUSSION: HIGH PRESSURE AND LIGHT WIND FLOW OVER AREA TODAY AND TUESDAY. THIS WILL BRING WARMING AND DRYING...

2. FOR THE FIRST BURN PERIOD...THIS AFTERNOON
   A. WEATHER..FOG DISSIPATING OUT OF BOTTOMS BECOMING MOSTLY SUNNY
   B. CWR..ZERO
   C. TEMPERATURE..MAX 55 TO 55 AT 5500 FEET AND 42 AT 8000 FEET.
   D. HUMIDITY... MIN FROM NEAR 50 PCT BOTTOMS TO 40 TO 45 PCT SLOPES
   E. WIND..EYE LEVEL...MOSTLY VARIABLE 0 TO 6 MPH. SW 15 MPH AT TIMES DOWN SLOPES OF ROCKIES.

3. FOR THE SECOND BURN PERIOD...TONIGHT
   A. WEATHER..MOSTLY CLEAR
   B. CWR... ZERO
   C. TEMPERATURE..MINS IN 20S TO NEAR 30....MIGHT EVEN FROST
   D. HUMIDITY..MAX 90 PCT BOTTOMS ....50 TO 60 PCT RIDGES/SLOPES
   E. WIND..EYE LEVEL... LIGHT TERRAIN TYPE WINDS

4. OUTLOOK FOR FOLLOWING BURN PERIOD...TUESDAY WARMER AND DRIER WITH LIGHT WINDS. HIGHS 55 TO 65. LOW HUM 20 TO 30 PCT

BENCHMARK RAWS 9/12/88

TIME	READING
1646	MAX TEMPERATURE 59 DEGREES
1546	MIN R/H 36%
1546	MIN 1 HR 12%
0146-0846	MAX R/H 100%

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
0900	33°	91%	18%	CALM	FOGGY

9/13/88 - 9/16/88 Tuesday through Friday

The helicopters are being used effectively on north and northeast head of the fire making water drops and transporting crews and supplies to the new spike camps at Gates Park and Wrong Creek. Using direct attack, the Lewis and Clark crew and Helena IH crew make good progress on the fire in the Goat Ridge and Seven Up Creek areas. The Prescott Hotshots, released from the Canyon Creek Fire, are ordered on 9/13/88 and report on 9/14/88. The Prescott crew is moved by helicopter to Gates Park on the morning of 9/14/88 where they direct attack hotspots on the southeast side of the fire near Biggs Flats.

Mike Piela, an employee of Montana Prescribed Fire Services, Inc., starts on 9/13/88 as Operations Chief on fire and flies into Gates Park camp to supervise field operations.

The two National Guard helicopters are released by IC Curtis as the pilots are out of time and no relief pilots are available.

GATES PARK WEATHER

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
0850	33°	82%	16%	CALM	CLEAR; FOG - VISIBILITY 1/2 MILE
1030	48°	63%	11%	CALM	CLEAR

SPOT FORECAST FOR...GATES PARK 18:25 PM MDT TUESDAY SEPTEMBER 13, 1988

1. DISCUSSION: LOW PRESSURE THAT BROUGHT THE PRECIP OF THIS PAST WEEK IS OVER UTAH AND SENDING SOME HIGH CLOUDS YOUR WAY. OTHERWISE IT WILL WEAKEN AND MOVE EAST AS A GULF OF ALASKA WEATHER SYSTEM APPROACHES FRIDAY WITH A GOOD CHANCE OF MORE PRECIP.

2. FOR TONIGHT...
   A. WEATHER..FAIR...
   B. CWR..ZERO
   C. TEMPERATURE...COOL...28-40
   D. HUMIDITY... RECOVERY EXCELLENT IN BOTTOM AREAS...MAX NEAR 100%... BUT RECOVERY POORER AT UPPER ELEVATIONS/RIDGES WITH MAX AS LOW AS 45% IN SOME AREAS...THERMAL BELT CONDITIONS LIKELY.
   E. WIND..EYE LEVEL..MAINLY DOWNSLOPE, 0-4 MPH. EASTERLY RIDGES 5-8 MPH

3. FOR WEDNESDAY.
   A. WEATHER... SUNNY
   B. CWR... ZERO
   C. TEMPERATURE... WARMER...MAXS 70 78
   D. HUMIDITY... MIN 17-23%
   E. WIND..EYE LEVEL... MAINLY UPSLOPE 2-7 MPH, EASTERLY RIDGES 5-10 MPH

4. OUTLOOK FOR THURSDAY...MOSTLY SUNNY...LITTLE CHANGE OVERALL.

BENCHMARK RAWS 9/13/88

TIME	READING
1646-1746	MAX TEMPERATURE 66 DEGREES
1646	MIN R/H 36%
1646-1746	MIN 1 HR 7%
0146-0846	MAX R/H 100%

BEARTOP LOOKOUT WEATHER 9/13/88

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
1305	5-10 MPH GUSTS TO 15 MPH SW	.1	
1400	3-7 MPH GUSTS TO 12 SW	.1	
1505	3-7 MPH GUSTS TO 12 E/SE	.1	
1600	0-3 MPH E/S/W	.1	

GATES PARK WEATHER 9/14/88

TIME	*TEMP*	*RH*	*FFM*	*WIND*	*REMARKS*
1400	56°	46%	3%	0-3 E	CLEAR

AFTERNOON FORECAST 3 PM MDT WEDNESDAY SEPTEMBER 14, 1988

DISCUSSION...HIGH PRESSURE WILL HOLD OVER THE AREA FOR ANOTHER 24 HOURS. SOUTHWESTERLY FLOW WILL DEVELOP ON FRIDAY WITH A PACIFIC FRONT MOVING INTO THE REGION DURING THE DAY. MOISTURE APPEARS LIMITED AT FIRST, BUT GUSTY WINDS ALMOST ASSURED. LOW PRESSURE ALOFT WILL MOVE SLOWLY INTO THE NORTHWEST OVER THE WEEKEND AND BRING MOISTURE...

ZONES: 101--102--103--104--105--107--108

FOR TONIGHT...
WEATHER..FAIR...
LAL: 1 CWR: ZERO
MINIMUM TEMPERATURES: 35-45, LOCALLY IN THE 20S HIGHER MTN VALLEYS
MAXIMUM HUMIDITIES: NEAR 100% VALLEY BOTTOMS, 50-70% SLOPES/RIDGES WINDS: MOSTLY DOWNSLOPE 3-5MPH.

FOR THURSDAY.
WEATHER... FAIR
LAL: 1 CWR: ZERO
MAXIMUM TEMPERATURES: 70-78
MINIMUM HUMIDITY: MOSTLY 20-30%
SURFACE WINDS: VARIABLE...MAINLY UPSLOPE 4-8 MPH.
FREE AIR WINDS: WEST 10MPH.

OUTLOOK FOR FRIDAY.....INCREASING CLOUDS, ESPECIALLY WESTERN ZONES. CHANCE OF A FEW SHOWERS FRIDAY AFTERNOON OVER THE IDAHO PANHANDLE. TEMPERATURES COOLING 5 DEGREES AND HUMIDITY UP 5%

SMOKE DISPERSION FORECAST...TONIGHT...MIXING BECOMING POOR AFTER 10 PM. MIXING LIMITED TO LESS THAN 1000 FT ABOVE GROUND LEVEL. MIXING WINDS LIGHT EASTERLY. THURSDAY...BECOMING GOOD BY MIDDAY. MIXING WINDS SW 10 MPH. MIXING UNLIMITED AFTER NOON.

BENCHMARK RAWS 9/14/88

TIME	READING
1446	MAX TEMPERATURE 78 DEGREES
1646	MIN R/H 23%
1546-1646	MIN 1 HR 5%
0146-0846	MAX R/H 100%

BEARTOP LOOKOUT WEATHER 9/14/88

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
0755	3-7 MPH N	CLEAR	
1000	4-7 MPH GUSTS TO 9 NE	CLEAR	
1200	CALM	CLEAR	
1400	0-3 MPH E	CLEAR	

BENCHMARK RAWS 9/15/88

TIME	READING
1446	MAX TEMPERATURE 76 DEGREES
1546-1746	MIN R/H 19%
1446-1746	MIN Q HR 5%
0146-0846	MAX R/H 100%

SPOT FORECAST FOR...GATES PARK 11:15 AM MDT THURSDAY SEPTEMBER 15, 1988

1. DISCUSSION: HIGH PRESSURE WILL HOLD OVER THE AREA, BUT TONIGHT WILL SEE THE ARRIVAL OF A WEAK FRONT INTO WESTERN MONTANA. A MAJOR LOW PRESSURE SYSTEM WILL BE OVER THE AREA THIS WEEKEND FOR SOME PRECIPITATION...SNOW AT THE HIGHER ELEVATIONS.

2. FOR THIS AFTERNOON...
   A. WEATHER... SUNNY
   B. CWR... ZERO
   C. TEMPERATURE... MAXS 68-75
   D. HUMIDITY... MINS 20-25%
   E. WIND..EYE LEVEL..MAINLY UPSLOPE 3-6 MPH, WEST TO SOUTHWEST ACROSS RIDGES 10-15 MPH...POSSIBLY INCREASING THIS AFTERNOON.

3. FOR TONIGHT
   A. WEATHER... INCREASING CLOUDS. 10% CHANCE OF SHOWERS LATE TONIGHT.
   B. CWR... LESS THAN 10%
   C. TEMPERATURE... MINS 35-45
   D. HUMIDITY... RECOVERY FAIR...MAXS 50-60%...BETTER IN BOTTOM AREAS.
   E. WIND..EYE LEVEL... DOWNSLOPE TO CALM IN PROTECTED AREAS...0-4 MPH. OTHERWISE WEST TO SOUTHWEST WINDS 8-15 MPH.

4. OUTLOOK FOR FRIDAY...
MOSTLY CLOUDY. 30% CHANCE OF SHOWERS. TEMPS DOWN 15 DEGREES, HUMIDITY UP 10-20%. WINDS GUSTY FROM THE WEST 10-20 MPH. STRONGER GUSTS POSSIBLE.

BEARTOP LOOKOUT WEATHER 9/15/88

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
0800	8-12 MPH NW	CLEAR	
1000	2-6 MPH N	CLEAR	
1200	0-5 MPH GUSTS TO 10 MPH NW	CLEAR	
1405	3-8 MPH GUSTS TO 12 MPH W	CLEAR	
1555	12-16 MPH GUSTS TO 28 MPH W/SW	HAZY	
1655	3-9 MPH GUSTS TO 12 MPH W	.1	

BENCHMARK RAWS 9/16/88

TIME	READING
1246, 1646	MAX TEMPERATURE 64 DEGREES
1646-1746	MIN R/H 27%
1646-1746	MIN 1 HR 6%
0446-0546	MAX R/H 100%

SPOT FORECAST FOR...GATES PARK 14:15 PM MDT FRIDAY SEPTEMBER 16, 1988

1. DISCUSSION: WEAK FRONT HAS PASSED THROUGH THE AREA WITH LITTLE ACTIVE CLOUDS AT THIS TIME. WINDS ARE EXPECTED TO INCREASE THIS AFTERNOON. HOWEVER ANOTHER IMPULSE IS DUE THROUGHOUT THE AREA SATURDAY, INCREASING THE CHANCE OF PRECIPITATION. SNOW LEVEL TO LOWER TO ABOUT 5 THOUSAND BY SUNDAY.

2. FOR THIS EVENING AND TONIGHT...
A. WEATHER... MOSTLY CLOUDY. SLIGHT CHANCE OF RAIN OR SNOW.
B. CWR... LESS THAN 10%
C. TEMPERATURE... MINS 35-40
D. HUMIDITY... MAXS NEAR 100% BOTTOM AREAS, AND 50-60% ELSEWHERE.
E. WIND..EYE LEVEL..WEST, INCREASING TO 10-20 MPH THIS EVENING WITH GUSTS TO 25 MPH RIDGES.

3. FOR SATURDAY
A. WEATHER... CLOUDY 40% CHANCE OF PRECIPITATION.
B. CWR... 20%
C. TEMPERATURE... MAXS COOLER 40-50
D. HUMIDITY... HIGHER....MINS 55-65%
E. WIND..EYE LEVEL...WEST 10-20 MPH AND GUSTING TO 30 ACROSS RIDGES.

4. OUTLOOK FOR SATURDAY NIGHT AND SUNDAY...MOSTLY CLOUDY. 60% CHANCE OF SHOWERS. TEMPS DOWN 15 A LITTLE... HUMIDITY UP SOME. WINDS GUSTY FROM THE WEST 10-20 MPH.

BEARTOP LOOKOUT WEATHER 9/16/88

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
0755	5-7 MPH W/SW	.9	
1000	0-5 MPH W/SW	VERY HAZY	
1200	3-8 MPH GUSTS TO 12 MPH W	.9	
1300	0-3 MPH W	.8	
1400	0-3 MPH W	.9	TRACE PRCIP
1600	0-5 MPH GUSTS TO 8 MPH W	.8	LAST 24 HOURS

Fire size is 50,800 acres.

September snows bring an end to the spread of the Gates Park Fire.

9/17/88 Saturday

At 0800, Beartop Lookout reports another weather front moving into the area. Visibility is limited to about 100 feet. Gates Park has received about .25 inches of moisture with light snow on the ground. The crews continue to work on trails.

SPOT FORECAST FOR...GATES PARK 10:35 AM MDT SATURDAY SEPTEMBER 17, 1988

1. DISCUSSION: COLD UPPER LEVEL TROUGH OF LOW PRESSURE WILL BE OVER THE AREA THE NEXT 24 HOURS WITH INCREASING ATMOSPHERIC MOISTURE.

2. FOR THE FIRST BURN PERIOD...TODAY
   A. WEATHER... OCCASIONAL LIGHT RAIN WITH LIGHT SNOW ABOVE 6000 FEET
   B. CWR... 60%
   C. TEMPERATURE... FROM 55 AT 5500 FEET TO 37 AT 8000 FEET
   D. HUMIDITY... 60 TO 90 PCT.
   E. WIND... EYE LEVEL... VARIABLE 3 TO 7 WITH SW TO NW 10 TO 15 RIDGES

3. FOR THE SECOND BURN PERIOD....TONIGHT
   A. WEATHER... LIGHT SNOW AT TIMES...1-2 INCHES BOTTOMS TO 3-5 INCHES POSSIBLE HIGHER ELEVATIONS.
   B. CWR... 80 PCT.
   C. TEMPERATURE... MINS 25 TO 35
   D. HUMIDITY... MAX 80 TO 100 PCT.
   E. WIND..EYE LEVEL... NW TO NE 3 TO 8 WITH GUSTS TO 20 AT TIMES

4. OUTLOOK FOR FOLLOWING BURN PERIOD... SUNDAY...VERY COOL WITH SNOW SHOWERS. NW TO NE WINDS 5 TO 15 MPH. HIGH TEMPERATURES 30 TO 40. MIN HUMIDITY 70 TO 80 PCT.

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
0800	0-3 MPH NE	HEAVY FOG	
1000	10-14 MPH E	FOG/SNOW	
1200	CALM	FOG/LIGHT SNOW	
1400	0-5 MPH GUSTS TO 15 E	FOG/SNOW	
1600	CALM	HEAVY SNOW	

9/18/88 Sunday

Gates Park reports an additional .09 inches of precip since yesterday afternoon. Due to the intensity of the snow storm, Curtis releases the Lewis and Clark and Prescott Hotshots crews and three helicopters. The power is out at the Choteau office due to the snow breaking power lines, therefore radios and phones do not work. The District use vehicles at the office and airport to communicate with aircraft and Great Falls Dispatch.

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
0800	4-6 MPH GUSTS TO 10 MPH NE	30%	
1355	0-3 MPH SW	FOG	.59" PRCIP
1720	0-5 MPH NW	85%	SINCE 1400 9/16

9/19/88 Monday

The fire is in good condition due to the moisture received on 09/17/88 and 09/18/88. Since the major suppression actions outlined in Alternative A of the EFSA have been completed, the Helena IH crew starts work as directed by the Fire Rehab Plan prepared by Tim Love. The first priority is to open all existing trails within the fire perimeter. Ray Mills, Wilderness Ranger has provided a list of trails by priority. Two district personnel begin rebuilding the structures lost at Wrong Creek. Replacing the main cabin is delayed until next summer.

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
0805	8-12 MPH GUSTS TO 16 MPH SW	.9	
1000	8-12 MPH GUSTS TO 15 MPH W/SW		SNOW
1200	8-12 MPH GUSTS TO 15 MPH W/SW		MODERATE SNOW
1400	10-14 MPH W/SW		MODERATE SNOW
1600	5-10 MPH W/SW		LIGHT SNOW

9/20/88 Tuesday

George Curtis releases another helicopter as it is not needed on the fire. Two light helicopters remain to move crews and recon the fire. The crews works on trail rehabilitation. No suppression action is taken and there is no significant fire activity.

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
0850	CALM	.4	
1000	2-5 MPH NE		FOG
1200	0 MPH GUSTS TO 3 MPH NE		FOG/LIGHT SNOW
1400	0 MPH GUSTS TO 3 MPH SE		SLEET .06" PRECIP
1600	3-6 MPH GUSTS TO 10 MPH S/SW	.4	SINCE 1400 9/19/88

The fire perimeter remains at 50,800 acres.

9/21/88 Wednesday

The crews work on trail rehabilitation. No suppression action is taken and there is no significant fire activity.

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
0745	0-5 MPH GUSTS TO 10 MPH NW	.1	
1000	3-8 MPH GUSTS TO 14 MPH NW	CLEAR	
1200	3-8 MPH NW	.1	
1400	5-10 MPH W	.1	TRACE PRECIP
1615	5-8 MPH GUSTS TO 15 MPH W	.2%	SINCE 1400 9/20/88

9/22/88 Thursday

A reconnaissance flight shows that the fire looks good. The majority of smokes left are on the west side of the North Fork of the Sun River and no problem are anticipated in this area. The north flank still has smokes and some potential for burning if a 10-day+ dry spell occurs. The crews work on trail rehabilitation and, by the end of the day, most of the work is completed.

BEARTOP LOOKOUT WEATHER

TIME	*WIND*	*CLOUD COVER*	*REMARKS*
0800	2-5 MPH NW	.4	

AT 1000 BEARTOP LOOKOUT WAS CLOSED FOR THE SEASON.

9/23/88 Friday

George Curtis is released back to his home unit and Mike Peila replaces him as Incident Commander. The demobilization plan is activated. The Helena IH crew and another helicopter are released along with two helitack. One helitack manager remains. George Curtis instructs Mike Peila that the fire should be monitored. The fire is reconned in the afternoon with smokes showing on the northwest, northeast and southwest perimeters. No suppression action is taken and there is no significant fire activity.

9/24/88 Saturday

Peila discusses the EFSA with Stiger and Kamrud. The control option is still in effect. Suppression forces are reduced due to tough logistics and the need to rely on helicopters to move people and supplies. A helicopter with bucket capability is to be kept on the fire for the duration. Six smokejumpers and one helitack and one Incident Command Dispatcher are ordered to fill suppression needs. A color ortho aerial photos survey is started of the fire area west of the North Fork of the Sun River for monitoring and evaluation purposes.

9/25/88 Sunday

The smokejumpers and one additional helitack arrive in Choteau. Gates Park reports an increase in fire activity. No suppression action is taken. There is no increase in the fire perimeter.

9/26/88 Monday

Grid maps are made in order to better locate priority areas along fire perimeter. Hot spots within these areas are located and prioritized by recon. Smokejumpers are organized into two person crews and moved to the spotfires by helicopter throughout the shift. There is no significant fire activity and no increase in the fire perimeter.

9/27/88 Tuesday

A gentle wetting rain fell on the fire area in the morning from 0600 to 0900. The ceiling is too low for helicopter operations until 1200.

9/28/88-10/1/88 Wednesday-Saturday

Wednesday morning brings an end to the cloudy weather and light rains and marks the beginning of a two week period of clear skies and warmer temperatures. The smokejumpers continue to work hot spots near the perimeter, mostly around Goat Ridge and Hoxsey Creek in the southwest and around Lick and Seven Up Creeks in the northwest. They also finish rehabilitating Trail No. 130 above Red Shale Creek. District people complete work rebuilding structures at Wrong Creek, begun two weeks earlier. The fire's activity increases somewhat with the warmer dryer weather, but it is extremely quiet, overall. Ortho aerial photos are taken of the area east ot the North Fork of the Sun River, completing the survey begun on 9/23/88.

10/2/88-10/8/88 Sunday-Saturday

The sunny weather continues for the entire week. The six smokejumpers work through the week in teams of two or three. Early in the week, they work on restoring helispots and the Biggs Creek base camp to more natural appearance. They also start work rebuilding the phone line between Gates Park and Beartop Lookout. Forest continues rebuilding and repairing fence and structures in the Gates Park area.

On Wednesday, 10/5/88, Smokejumper Foreman Bernie Hilde replaces Mike Peila as IC. Hilde, one of the smokejumpers already at Gates Park, will remain at the fire site and handle reports and orders by radio. Jerry Nypen, examines the fire area from the helicopter.

Toward the end of the week, the fire becomes more active and the crews move to line spots along Route Creek near Wapiti Ridge and in the Biggs Creek area. Hilde request additional manpower to deal with the increased activity along the entire fire perimeter.

10/9/88-10/15/88 Sunday-Saturday

On Sunday, Hilde plans to construct line around active spots along Lick Creek and the unnamed creek just north of it, using 3000 feet of Fire Line Explosive. On Monday, a helicopter begins operations, ferrying crews to hot spots and making water bucket drops.

Air restriction go back into effect over the fire at 1000, Wednesday- 10/12/88. An infrared aerial survey is made of the fire at 2030. On the same day, Casey, Stiger, District Resource Assistant Patty Johnson, Regional Ecologist Wendel Hann, Regional Hydrologist Bill Putman, and Bert Lindler, reporter for the *Great Falls Tribune* start a three day horseback survey of the fire area. Four additional smokejumpers arrive in Choteau and are flown into Gates Park.

A twin Otter aircraft brings Fire Line Explosive and other equipment into the grass airstrip at Gates Park. Blasting begins in the drainage just north of Lick Creek on the morning of the 10/13/88, but it is halted by strong afternoon winds. The blasting is finished the next morning, shooting two section of line on the North Fork of Lick Creek.

Light rain starts to fall early on Saturday moring, with Gates Park receiving .20 inches by 1400. The rain is wetting everything well, getting under the tree canopy to wet both the ground and ladder fuels. The rain continues through the night.

10/16/88-10/30/88 Sunday-Wednesday

By 0800 on Sunday, 10/16/88, Gates Prak has received an additional .75 inches of rain. Steady rain continues throughout the day, with .94 inches recorded by 0800 on Monday, 10/17/88. Kamrud and Hilde discuss plans for the final mop up of the fire. Kamrud advises Hilde of the need to limit helicopter use, especially east of the river, once hunting season opens. Hilde releases 4 smokejumpers early in the week. While the helicopter is available, the crew continues rebuilding the phone line between Gates Park and Beartop Lookout.

On Monday, 10/17/88, Casey, Love, Johnson, and Bushey meet at Benchmark with a congressional subcommittee reviewing the Prescribed Fire Policy.

On Tuesday, 10/18/88, Forest Hydrologist Valdon Hancock again surveys critical segments of the North Fork of the Sun River and its tributaries. All restrictions, except air space, are lifted from the fire area. With fire activity virtually nil and little prospect of any increase, crews remove the dams on Wrong Creek and upper Biggs Creek. District personnel work on mending fences in the Gates Park and Wrong Creek areas.

On Friday, 10/21/88, the helicopter, helicopter support and all but three firefighters at Gates Park are released. Light rain falls again that night. The remaining three crew members, two smokejumpers and a cook, work in the Gates Park area monitoring the fire and working on rehabilitation.

Another weather front moves into the area early Wednesday, 10/26/88, eventually dropping 6 inches of snow. The Gates Park Fire is declared controlled. With more wet weather forecast, Hilde and Kamrud set up final demobilization for the weekend.

On Sunday, 10/30/88, Kamrud brings the last three firefighters out of Gates Park on horseback. It has been a long, long summer!

GATES PARK PRESCRIBED FIRE CHRONOLOGY APPENDIX

LIST OF APPENDIX MATERIAL - Volume II

A. Fire Detection Report
B. Daily Fire Weather/Fuel Moisture and Fire Size
C. Historic Weather Report
    1. Accumulative precipitation percent of normal
    2. Snowpack
    4. Energy Release Component 1983-1988 plotted against Ten-Year Average
D. Beartop Lookout Weather Data
E. Air Quality Monitoring Report
F. Escaped Fire Situation Analysis and Contingency Plan
G. Final 209
H. Damage Inventory and Rehabilitation Plan
I. Post Fire Studies
J. 1988 Fires - Date Detected - Status - Final Size - Final Cost
K. Up Front Fact Sheets and Distribution List
L. Group letters written to Permittees, Outfitters and other users
M. Impact Analysis Team Meeting Notes
N. Key Missoula Fire Weather Forecasts
O. List key personnel, Qualifications and Dates on the Gates Park Fire
P. Wilderness Fire Program - Fire Ecology
Q. Gates Park Weather Chronology Sept. - Oct.
R. Fire Intensity Map
S. Fire Behavior Computations for July 25-28 Fire Behavior/Fuels Report
T. Photo Record and Typical Fuels
U. Map of actual fuel models
V. Map Chronology, Fire Spread and Actions Taken
W. Gates Park Fire Projections Map 7/13 and 7/23